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PUNCTURE OF THE CORPUS CALLOSUM

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THE problem of how best to give relief for the condition of cerebral compression from unlocalisable tumour is still frequently an anxious one. To the general practitioner of fifteen years ago, the idea of a palliative operation in cases of brain tumour was practically unknown. To-day the pendulum has swung somewhat to the other extreme, and the ill-informed as well as the well-informed medical man who comes upon the syndrome of headache, vomiting, and optic neuritis, immediately advises decompression without knowing very much how this measure is to be carried out, or whether the case is a suitable one. The results of decompression, when compared with those of the "folded hands" treatment of a few years ago, have been so brilliant, that expectation has mounted higher than is warranted by experience. Decompression is by no means always followed by even partial relief; too much must not be promised.

With these reservations it must be said that decompressive trephining as a palliative measure is a most grateful operation in many cases. It is now everywhere acknowledged that Cushing's subtemporal procedure is the operation of choice for the purpose of pure decompression by means of the removal of bone and the opening of the dura mater. The literature of this operation is already fairly extensive. Sometimes, however, it proves insufficient; in spite of a large submuscular hernia, the symptoms occasionally persist. In such cases the reason may lie in the coincidence of a large hydrocephalus internus, such as is known to complicate cerebral tumour not infrequently. It was experiences of this sort

that led Anton, the neurologist at Halle, in the year 1908, to propose perforation of the roof of the corpus callosum as a method likely to relieve intracranial pressure due to excess of fluid in the lateral ventricles. This procedure would create a communication between the ventricles and the entire cerebral and spinal subdural space. Anton argued that such a communication would remain permanently open on account of the current set up between the ventricles and the subdural space, and particularly so under conditions of increased pressure in the ventricles. Post-mortem examinations, indeed, soon showed the correctness of this view in, at any rate, many of the cases.

The idea was welcomed by von Bramann, of Halle, who worked out the practical surgical details. During the last four years they have, jointly and separately, published a number of articles recording their results, results which have been upon the whole encouraging. In a recent article, they give a brief report of 52 cases of which 28 were diagnosed as tumour, 18 as hydrocephalus, 3 as epilepsy, and 3 various other conditions. In 31 instances the cerebrospinal fluid was evacuated through the cannula under considerable pressure, in 20 under slight pressure. The degree of later relief did not always correspond with the measure of intraventricular tension. In 33 cases optic neuritis was present, and in 18 of these the swelling of the nerve head subsided more or less completely after the operation; in 15, no improvement was obtained. In three of these last, there was done subsequently a decompressive trephining, but without avail. These three were all cases of basal tumour.

In the hydrocephalic cases, they remark in general that the acquired condition was much more apt to be benefitted than the congenital; which, one may suspect, is only another way of saying that they had to record the unsatisfactory results to which we are all so used in our attempts to relieve congenital hydrocephalus. Three successful cures of the disease which von Bramann relates were clearly instances of fairly acute hydrocephalus in children aged 2, 4½, and 7 years, respectively. The last, it is true, had begun at the third year and had become chronic. But none could be regarded as of the ordinary congenital type.

They had done the operation in three cases of epilepsy, with apparent improvement in one, and without benefit in the other two.

In most of their tumour cases, headache and vomiting were relieved more or less, as also stupor or coma, when present. Dis-

turbances of motility, such as paresis, ataxia, contractures, were often favourably influenced.

In quite a number of cases the operation was done as a preliminary measure in order to reduce pressure and render easier the later removal of tumours. No patient died as the result of the operation.

The technique of the operation is briefly as follows. On the right side, about a finger's breadth behind the coronary suture and 2 cm. from the mid-line, an opening is made with the Doyen burr, about 1·5 to 2 cm. in diameter. A slit opening is made in the dura, and care is taken to avoid any large cortical vein. Then a curved hollow cannula is pushed in over the convexity of the cortex till it strikes against the falx, which membrane guides the further progress of the cannula downwards, till the corpus callosum is reached. The instrument breaks bluntly through this structure with very slight force, whereupon the ventricular fluid is emptied, usually under some pressure. An average of 10 to 30 c.cm. of fluid is evacuated; but in cases of marked hydrocephalus as much as 70 c.cm. (over 2 oz.). Von Bramann advises enlarging the hole by pushing the cannula forwards and backwards; over what distance he does not say.

The operation is recommended for all cases of hydrocephalus which defy internal treatment and have not been ameliorated by lumbar or ventricular puncture; for all cases of tumour or pseudotumour of the brain, accompanied by hydrocephalus and optic neuritis; and finally for decompression as a preliminary measure to extirpation of tumours.

It seemed to the writer that Anton's principle was correct, and the operation has been tried in the few cases of which the reports are given below. The literature of the operation is still scanty; apart from Anton and von Bramann's reports, I can find only one article, by Rydigier of Lemberg, containing a brief account of ten cases; but doubtless surgeons are trying it out everywhere, and there will soon be a profusion of reports.

Of the four cases here related, two concerned unlocalisable brain tumour, and two hydrocephalus.

Hydrocephalus

Case 1. D. G., female infant, æt. three months; admitted to the Children's Memorial Hospital, February 2nd, 1910 (under the care of Dr. A. Mackenzie Forbes, chief surgeon of the hospital, and by him kindly transferred to the writer's care). The relatives had

noticed a rapid enlargement of the head from the age of two months on, but particularly so in the last two weeks before admission. Labour had been long (thirty-six hours) and delivery had been assisted by forceps, but the child appeared quite normal, and remained well for the first two months. There was no history of convulsions, but she "rolled her eyes a good deal" of late. In the family or personal history there was nothing of importance. She began to vomit the day before admission.

Present Condition: Head typically hydrocephalic and of marked grade. Circumference at parietal eminence is 50 cm.; glabella to inion is 35 cm. Child vomits everything. Cheyne-Stokes breathing of irregular type is noted. Fontanelle very tense. February 3rd—Ventricular puncture, 3 oz. removed; fluid perfectly clear; Wasserman and Noguchi negative. February 8th—Puncture of the corpus callosum done. For two weeks drainage was apparently free, to judge by the way in which the fontanelles remained lax, and by a diminution in circumference of 2½ inches. Then the hole in the corpus callosum probably closed, as fluid reaccumulated; so that I decided to repeat the procedure on the opposite side. This was done on March 3rd, with the addition of a permanent drain consisting of a thick silk wick, about the size of a lead pencil. The autopsy later showed that this was correctly placed, but failed to drain. It clearly excited dense adhesions with the falx and the brain itself. I feel that a smooth metal tube would have been better than silk, as being less likely to provoke adhesions.

There was no relief obtained. On the contrary there was excited an acute inflammatory reaction with some bleeding, and the head rapidly filled up, so that by the following day I had to aspirate again. In the next three weeks five punctures were necessary. Finally, on March 22nd, I attempted to secure drainage from the lumbar canal. Before doing so, I desired to assure myself again that the cerebral and spinal cavities were in free communication. Therefore, after the child had been chloroformed, I inserted one needle into the lateral ventricle, and another into the lumbar canal. Each needle was attached to a manometer. It was found that with the child horizontal, ventricular pressure was 340 m.m. and spinal 360 m.m. (three times normal). Now as the head was lowered or raised, the fluid in the tubes was seen to seek its level, going up in the ventricular tube and down in the spinal tube (head low), and *vice versa*.

Free communication being thus apparently established, I did,

on March 22nd, a laminectomy, excised a piece of dura, and inserted two drains of rubber protective enclosing several strands of silk. One of these led from the subarachnoid to the subcutaneous tissue, the other from the epidural space to the sabcutis. The skin wound was closed. The latter at once became œdematous, but this all disappeared in a few hours, and no further drainage occurred subsequently. In four days it was necessary to puncture the ventricles again; and from this date, March 26th, until May 15th, the child was kept going with punctures, withdrawing on an average 8 oz. of fluid once a week. In May, however, reaccumulation began to occur so rapidly that the punctures had to be repeated every two, three, or four days. I may say that from February 3rd to May 15th, eighteen punctures in all were done, and a total of 124 oz. of fluid removed.

On May 15th I excised the right choroid plexus, upon the theory that the cause of congenital hydrocephalus is rather oversecretion from the choroid plexus than obstruction to reabsorption of the fluid. (This formed the subject of a paper read at the 1910 meeting of the Canadian Medical Association, but not published.) The child died of shock 2½ hours after the operation. The autopsy showed enormous dilatation of the lateral and third ventricles, none of the iter or of the fourth ventricle; also a large arachnoid cyst situated entirely under the tentorium, overlying, and dipping down between the cerebellar hemispheres. It seemed fair to assume that the cyst was the primary lesion, and that in its growth it had compressed the fourth ventricle and the aqueduct, thus bringing about the hydrocephalus which, upon the basis of the observation of equal pressures in ventricles and spinal canal, had been considered congenital.

At the risk of digressing, I would like to refer briefly to the question thus brought up. Upon a few occasions I have punctured simultaneously the spinal and the ventricular cavities, and measured the respective pressures on attached manometers; and have always found that the pressures varied in direct ratio with the influence of gravity, going up in the one and down in the other, according as the head was lowered or raised. This I have accepted as proof that the cerebrospinal space was open, that the water in the cerebral ventricles communicated freely with that in the lumbar subdural space; and consequently that the hydrocephalus (if such were in question) was of the congenital variety, and not due to adhesions near the foramen magnum or to blockage of the fourth ventricle or its foramina.

In view of the autopsies in this case and the next, I feel myself forced to conclude that such a reasoning may be quite erroneous. In both these cases, the hydrocephalus was caused by mechanical obstruction in or near the fourth ventricle, in the one by pressure of the cyst, in the other by gliomatous obliteration of the fourth ventricle and iter. And yet in both I was able to demonstrate the variations in manometer readings mentioned above. I suspect strongly therefore, that the real reason for the fact that ventricular pressure rises and lumbar pressure falls when the head is put low lies, not in the collecting of extra fluid in the ventricles by gravity and loss of it in the lumbar space, but in the natural change in venous pressure under such conditions. I have found that cerebrospinal fluid pressure (lumbar) will show an excursion of as much as 100 mm. or more between forced expiration and forced inspiration, both held for ten seconds, going low in inspiration and high in expiration. This, surely, is nothing more than changes in the general venous pressure. The pressure under which the cerebrospinal fluid stands corresponds therefore with the pressure in veins adjacent to the point of puncture. With the head low, venous pressure in the cerebral veins will rise, and ventricular pressure will rise with it, and as a consequence of it; while, the lumbar region being at the same time elevated, venous pressure here will fall and spinal fluid pressure too, as a result; and this quite independently of whether there exists a block or open communication between the spinal and ventricular cavities. Experimental evidence for the correctness of this view has been furnished by Leonard Hill. This by the way.

The hollow silk wick pushed through the corpus callosum at the second operation had become densely adherent to the falx and the mesial surface of the hemisphere; it had lost its lumen and become a solid cork for the hole made in the corpus callosum. No trace of the first opening in the corpus could be discovered, but it may have been involved in the region of the second, with its adherent wick. If the first puncture had accomplished anything, it was only for two weeks; the opening must then have closed. Consequently, the procedure was a failure in this instance.

Case 2. V. D. B. æt. 2½ years. Admitted to the Royal Victoria Hospital in the writer's service April 30th, 1911.

The child was born apparently healthy. Labour was normal. On the seventh day convulsions came on, and continued at short intervals for three months. They were never focal in type, always generalized. There have been none since. "Meningitis" was

diagnosed by attending medical men. Subsequently, the child grew very slowly; the head gradually increased to an abnormal size; mentally he did not develop at all. Recently he had taken very little food, swallowed poorly, was becoming emaciated, and had occasional vomiting. On examination it was found that the whole right side was paretic, the arm being chiefly affected. The left arm was in constant movement. The left side of the head was more prominent than the right, and the whole was typically hydrocephalic, the circumference measuring 52 cm. Babinski's sign was present on the right. No ankle clonus; knee-jerks present on both sides, not exaggerated on right. The cerebrospinal fluid was examined; the Noguchi reaction was negative, the globulin not increased. The blood pressure varied from 65 to 100 mm. Hg.

May 12th.—Operation. Puncture of the corpus callosum was done through the fontanelle on the left side. Cerebral pulsation was present and there was no marked bulging. A considerable amount of fluid escaped under moderate tension; it was apparently not measured on this occasion. Some œdema of the scalp was evident for a few days. There was a definite improvement for two weeks; the spasticity in the right arm disappeared; he took food well, and swallowed well; seemed brighter, and was not irritable as before. The epigastric and cremasteric reflexes, previously absent, reappeared. After a fortnight, however, the child gradually subsided into its former condition.

On June 16th, I measured simultaneously the pressure in the ventricle and the spinal subarachnoid spaces:

	Lumbar	*Ventricular*
Child horizontal—quiet	100 mm.	130 mm.
" " —crying	250 "	350 "
Child's head low	zero	180 "
" " high	130 "	zero

In general, the pressure went up or down in both cavities in inverse ratio under the influence of gravity. After removal of some fluid from the ventricles, the pressure, originally at 130, came down to 85 mm. The observation demonstrates the absence of marked elevation in cerebrospinal pressure in old, more or less stationary, cases of hydrocephalus; and helps to explain the failure of drainage operations from ventricle to subdural space. In the more chronic cases, the collection of fluid in the ventricles, having distended the brain and skull to their utmost extent, ceases to

accumulate, or, at least, is added to very slowly; the fluid pressure in the ventricles may then become approximately normal, but the size of the ventricular cavities has become permanently large, incapable of contraction. Even if the ventricular fluid were largely emptied and the cranial bones compressed together so as to overlap at the sutures, the brain itself, become little more than a bag, is incapable of a corresponding reduction in size, and can do no more than collapse in folds, the ventricles remaining potentially as large as before. Under such circumstances, those of the chronic internal hydrocephalus of marked grade, the intraventricular fluid pressure is so low that it may be insufficient to force fluid from inside the ventricles and into the longitudinal sinus, as it does normally; and the establishment of a drainage opening through the corpus callosum, the general cortex, or the cisterna magna fails to accomplish drainage. Such a measure must be done early, during the acute or the advancing stage of internal hydrocephalus, while intraventricular pressure is presumably high, if it is to do good. But in the infant, it is this stage which is let pass under the diagnosis of "convulsions" or "meningitis" without a thought of operative relief. Occasionally a timely lumbar puncture will break the commencing vicious circle, and relieve meningeal symptoms almost certainly due to early hydrocephalus.

To return to the case report. During the next two months, the baby gradually failed, the organic symptoms remaining as before. It finally refused all nourishment, became greatly emaciated, and died August 25th during the writer's absence.

The autopsy report (Dr. C. K. Russel) emphasized the high grade of hydrocephalus, both of the lateral and of the third ventricles. The corpus callosum was as thin as a piece of tissue-paper. The operative perforation had apparently closed; no mention is made of it in the report. There was no external hydrocephalus. There were a number of small cysts throughout both hemispheres. At one place in the left hemisphere, approximately in the motor radiations, there was a firm jelly-like tumour, partly cystic. There was similar abnormal tissue in several situations in both hemispheres. The medulla was fairly hard, and a section about the level of the sixth nucleus showed a mass of the same greyish, jelly-like, tumour tissue, filling in the fourth ventricle completely, no trace of the latter being left; and also infiltrating the roof nuclei of the cerebellum. The fourth ventricle and the aqueduct were not discoverable, until, going forward, one reached the level of the crura where a distinct cavity began in the situation

of the aqueduct. Microscopically this neoplastic tissue was gliomatous. The pia-arachnoid was considerably thickened at the base over the lower medulla and beginning of cord.

Unlocalisable Tumour

CASE 1.—P. N., a young man of twenty-one years, was admitted in December, 1911, to the Royal Victoria Hospital under Dr. Birkett's care. He was then examined by Dr. C. K. Russel, neurologist to the hospital, because of signs indicating a cerebral lesion; and on January 16th, 1912, was transferred by Dr. Russel to the writer's ward for surgical treatment.

The history was a little indefinite, but it was established that, beginning two years previously, he had suffered from a number of attacks of headache accompanied by vomiting, lasting a week or two, and with intervals of several months' well-being.

Upon examination it was discovered that he had a double optic neuritis, of three diopters on the right and two on the left side; and a slight left facial palsy of all three branches. Otherwise there were no signs that might give a clue to the topical diagnosis of the lesion, nor, it may be said, did any such sign develop in the subsequent course. His blood gave a positive Wassermann reaction, wherefore he was given inunctions and potassium iodide for nearly three weeks, but without improvement.

On January 30th it was noted that the papillœdema was increasing. Consequently, on February 3rd, Cushing's subtemporal decompression was performed. On February 7th it was noted that his facial palsy had disappeared. On February 16th he was discharged, much improved as to headache and vomiting, and with slight diminution in the swelling of the nerve head.

On March 3rd, he was readmitted. His headache had returned and was now constant; he had vomited at times; his optic neuritis again measured four right and three left. There was bulging in the right temporal region, which was markedly tense. The left facial paresis had reappeared (this was regarded as one of Collier's false localising signs).

On March 6th, a second decompression was done, and this time a puncture of the corpus callosum. The pressure in the ventricle was found to be 580 mm., about five times the normal. With the removal of 24 c.c. (6 drachms), the pressure was reduced to 140 mm. There ensued rapid relief from headache and vomiting, and the excessive temporal bulging was immediately reduced very markedly. On March 13th, he was discharged.

Since this date, the patient has been free from headache and vomiting, except for three or four periods of a few days each, during which the two areas of decompression (some bone was removed over the vertex on the occasion of the callosal puncture) would swell to a considerable degree. I think it is reasonable to consider these periods as representing recurrences of the hydrocephalus, which upon attaining a certain pressure, succeeded in reopening the hole in the corpus callosum, which may have become closed. In the intervals, lasting months at a time, he would be fairly well and the decompression areas would remain quite soft and flat. For some months past, however, he has been showing evidence of a possible frontal tumour in the way of loss of memory, careless habits, easy anger, loss of concentration, and occasional delusions. The eyes have not been examined since his last appearance in hospital, in April 1912, when there was still a swelling of three or four diopters in each eye. His vision, however, is reported to be good.

Case 2. A. F., æt. twenty-two. The history, briefly, was that since the summer of 1912 he had suffered increasingly from headache and vomiting. At the beginning of January, 1913, he found rather suddenly that he was losing his eyesight; and in a very few days he had become almost completely blind. He was admitted to the Royal Victoria Hospital in Dr. McCrae's service on March 11th, 1913. Upon thorough examination of the nervous system, no clue could be got as to the situation of the tumour. There was a double choked disc with four diopters of swelling in each eye. The left eye was almost completely blind; in the right, vision was so impaired that he could not count fingers, though he could see dimly the hand held up before him. The temporal field of his retina was practically blind; the nasal field gave him what vision he had. A later skiagram suggested some destruction of the clinoid processes. There were no signs of dyspituitarism.

On March 12th, he was transferred to the writer's service, and on March 13th a callosal puncture was done through a fairly large osteoplastic bone opening. Clear yellowish fluid under considerable tension (not measured) was evacuated, in amount about 12 drachms. The specimen was unfortunately lost, but its appearance suggested old hæmorrhage.

From the patient's rather sudden loss of vision, the condition as above described of his fields, the skiagram, and the finding of fluid suggesting old hæmorrhage in his ventricles, one may suspect

that the situation of the tumour is basal, possibly near or in the pituitary, possibly projecting into the lateral ventricle.

The effect of the callosal puncture on the headache and vomiting was immediate and marked. To the present date (May 10th, 1913), he has had no further pain or vomiting. The swelling of the nerve head, however, had in two weeks shown so very little subsidence, that it was considered advisable to give him more intracranial room. Accordingly, on March 26th, Cushing's subtemporal decompression was done on the right side. This seemed to give the extra space needed, as within a very few days the optic swelling had almost quite subsided, revealing, however, the greatly-feared secondary atrophy. The boy remains permanently blind. At the present date, it is clear that the tumour is growing rapidly. The osteoplastic flap over the vertex is being lifted more and more, while the subtemporal bulging is becoming more pronounced. There are still no signs of localising value.

Conclusions

1. In these two cases, it was evident that neither one of the two methods of decompression was in itself sufficient to get the best results. Each in turn had to be supplemented by the other. In the first, the recurrence of headache, vomiting, and optic neuritis after the subtemporal craniotomy forced one to the callosal puncture, which proved sufficient. It might perhaps have been sufficient of itself if done primarily, as the case is probably one of hydrocephalus chiefly. In the second, the failure of the callosal puncture to bring about subsidence of the optic neuritis forced one to add the subtemporal operation, which was successful. In this case, to judge from the subsequent course, neither operation alone would have been sufficient.

2. I am inclined to think that callosal puncture gives promise of being a satisfactory operation for decompression in many cases of tumour, especially in the presence of a complicating hydrocephalus. It is, however, not easier to do than the subtemporal operation, unless one is content to go at it a bit blindly, as von Bramann recommends, through a small opening, and run the chance of breaking large cortical veins or the lacunæ outside the longitudinal sinus. I cannot yet bring myself to do without a good exposure in this operation.

3. In obstructive hydrocephalus of high grade in the infant, (two cases) callosal puncture proved temporarily of slight benefit, but ultimately failed to relieve the condition.

4. I would like also to call attention to the evidence here afforded that simultaneous lumbar and ventricular measurements of cerebrospinal fluid pressure cannot inform us certainly concerning the patency or non-patency of the communication between the ventricles and the spinal subarachnoid space.

BIBLIOGRAPHY

ANTON, *Med. Klinik*, 1909.
v. BRAMANN, *Deut. Med. Woch.* xxxv. No. 38, *Arch. f. Klin. Chir.*, xc, No. 3.
ANTON, *Wien. Klin. Woch.* xxiii, No. 48.
v. BRAMANN and ANTON, *Münch. Med. Woch.* lviii, November, 1911.
v. BRAMANN, *Arch. f. Klin. Chir.* xcvi, No. 1.

THE following is the list of candidates who have graduated in medicine this year from the Western University: Archie T. Laird, Blenheim; Frederick H. Bowen, London; Geo. A. Smith, Toronto; Thomas W. Moore, Listowel; Lorne Faunt Jones, London; Alfred T. Turner, Carlingford; Allan M. Yates, Hamilton; Thomas Cuddy, Strathroy; William J. Aikenhead, Brucefield; Richard McAllister, Fernbank; Leslie Roy Aiken, Mandaumin; Charles Hulse Brereton, Bethany; Frank W. Overholt, Hamilton; Cecil H. Edmunds, Arkona; Alexander Muterer, Ingersoll; William Hambly Avery, Strathroy; Robert M. Luton, Mapleton; Charles A. Harris, Lakeside; Lee Elliott, St. Thomas; L. Kershaw Poyntz, Toronto; J. Thornley Bowman, London; C. E. McDonald, North Bay; Clarence F. Wright, London; William John Scott, London.

Gold medalist, J. Thornley Bowman, London; silver medalist, Lee Elliott, St. Thomas.

SOME RECENT WORK ON ACCESSORY FACTORS IN NUTRITION

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UNTIL a few years ago our conception of the value and properties of foodstuffs in relation to nutrition were almost entirely governed by ideas of energy values and digestibility. Within the last decade, however, observations have been accumulating which tend to dissipate the narrowness of such views and it seems probable that ere long our knowledge of the nutritive value of foodstuffs and of proteins in particular will be placed on a much firmer foundation than heretofore.

The stimulus to study afresh the problems of nutrition undoubtedly came from the rapid growth in our knowledge of the chemical nature of the proteins which occurred about the end of the last and the beginning of the present century. Coupled with this, and impossible of exact study without the knowledge furnished by a detailed investigation of the structure of the proteins, was the radical change in our notions of the work done by the digestive ferments of the alimentary tract. It has long been known that *in vitro* the combined action of the ferments trypsin and erepsin was capable of splitting up the protein molecules into their simplest components, the amino acids. The work of London and his colleagues has now shown that this action also takes place in the living animal within the ordinary periods of digestion, and furthermore, the most recent investigations of Folin and his pupils have shown that it is in the form of simple amino acids that the proteins are eventually absorbed into the blood stream and so passed on to the tissues.

It was in the early days of experiments on the nutritive value of the proteins that the fact was discovered that gelatine cannot entirely replace other proteins in any adequate diet, but the reason was not furnished until we learned that it did not contain in its molecule, either of the amino acids tyrosine and tryptophane, which are present in most of the natural proteins. The next main advance in our knowledge of the nutritive value of proteins was furnished by experiments of Henriques and Hansen.

These observers attempted to determine whether casein, when completely digested by the combined action of the ferments trypsin and erepsin, would keep animals in nitrogenous equilibrium, that is, maintain them in health, without loss of body protein. This they succeeded in doing with white rats in experiments lasting over twenty-five days, the animals of course receiving a sufficient amount of carbohydrate and fat along with the digestive products of the protein. On trying the same experiment with casein which had been split up into its constituent amino acids by means of sulphuric acid instead of the alimentary digestive enzymes, it was found that the animals could not be kept in nitrogenous equilibrium. Here then was some difference in the nutritive value of the two digestion products which had previously been thought to be the same. On examining the two products, Henriques and Hansen found that tryptophane was present in the trypsin-erepsin digest, but was absent from the mixture obtained from the casein by the action of acid. This work tended to show then, that the amino acid tryptophane must be present in any protein that is to be adequate for nutrition. A year later, it was shown by Willcock and Hopkins that there are other indispensable constituents of the protein portion of a diet besides tryptophane. These observers attempted to maintain mice on the protein zein of maize, which contains no tryptophane. The mice died after short periods, but on adding tryptophane to the diet, although the period of life was prolonged, the mice gradually declined and eventually died. Since zein is deficient in the diamino acid lysine, it is possible that the decline, even when tryptophane was given, was due to the deficiency of this diamino acid. Interesting experiments on the ability of different diets to maintain life were published by Stepp in 1909. Stepp proved that mice could be kept in good health for months on a rice preparation (protamol), made into cakes with milk, and young mice also grew well on this diet. If, however, the food was thoroughly extracted with alcohol and ether, the mice died in less than twenty days. The addition of the substances extracted by the alcohol and ether did not bring back to the extracted food its previous nutritive value, probably owing to the destruction of the active substances in the process of extraction. The addition of small amounts of egg yolk, however, brought back to the diet its full nutritive efficiency. In an attempt to restore to the food its active principles, various substances such as butter, triglycerides of oleic, palmitic and stearic acids, and lecithine and cholesterine were added without success. An alcohol-

ether extract of milk powder or the addition of pasteurized milk made the food once more effective in maintaining health. It is interesting to note that even milk which had been boiled for half to one hour was successful in bringing back to the diet its former nutritive powers in a few cases, but not in all. These experiments of Stepp make it appear that some substance, or substances, soluble in alcohol and ether are indispensable components of a diet if it is to maintain life, and they show that the active substances are not lecithine, cholesterine, or the simple fats.

In 1909, Osborne and Mendel, at the Connecticut Agricultural Station, commenced a long series of experiments on the nutrition of white rats, more especially with regard to the nutritive value of single proteins. Their criticism of the work of the previous investigators just described, is based quite justly on three main points: (1) none of the experiments were of sufficiently long duration to determine whether, in the apparently successful cases, the diet was really adequate to maintain health during a considerable span of the animal's normal life; (2) no record is given of the food intake, and consequently in the unsuccessful experiments it is not possible to decide whether the animals were receiving enough calories to cover their requirements; (3) in such small animals the maintenance of nitrogenous equilibrium as used by Henriques and Hansen is not the best criterion of the efficacy of a diet, but much rather should its power to maintain weight in adult animals be made use of.

Starting out with these considerations in view and devoting their attention at first to the maintenance of adult animals, Osborne and Mendel were able, after many unsuccessful trials, to find a diet containing only a single protein which would keep rats at approximately constant weight for a considerable period of time. By using a diet consisting of casein, cane sugar, starch, lard, agar-agar, and a salt mixture, rats were kept at constant weight for one hundred and sixty days. The casein was then gradually replaced by the wheat protein glutenine until this substance became the sole protein in the diet, and a rat was kept on this mixture for two hundred and seventeen days. These results indicated that monotony or non-palatibility of the diet does not play as large a part in such feeding experiments as was previously thought. Although these experiments were apparently successful in demonstrating the nutritive efficiency of single proteins, they were not really so, as with more prolonged trials it was invariably found that the animals began to decline and, unless a change of diet were instituted, death resulted.

It was observed that the animals in these experiments became koprophagists, and the conclusion was drawn that feeding with the fat-rich diets which were being used, might possibly have brought about a change in the intestinal flora, which in turn might have some influence on the nutritive efficiency of the food. In order to test the hypothesis, fæces from rats living on a mixed diet were given in small portions twice a week to the rats living on the restricted diet and in almost all cases the decline was stopped. Sterilization of the fæces before administration was tried in order to determine whether the success of fæces feeding was due to the bacteria introduced or to other substances. It was found that sterilized fæces were not so effective in stopping the decline as fresh fæces, but sufficient trials were not made to make this certain.

The supreme test of the adequacy of a diet is that it will promote normal growth in the young animal. Osborne and Mendel, in the course of their experiments, very soon discerned that a diet which was satisfactory for the maintenance of weight was by no means satisfactory for purposes of growth. They therefore turned their attention to the factors involved in the growth of young animals. Until a few years ago, from the knowledge at our disposal, there appeared to be no reason to assume that a young animal would not grow if it were given a sufficient amount of protein, carbohydrate, fat, and salts, due consideration being paid to the large amounts of such substances necessary to the young animal, as compared with the adult, for purposes of increase of body weight. We are coming to see, however, that certain essential factors are not considered in this conception of a perfect diet.

Growth is affected by two factors,—nutrition, and what we may call for want of a better term, the growth impulse or growth potential. Given the requisite nutritive conditions, the growth potential determines the rate at which the young animal will grow during any given period. It is probably best measured by the percentage increment in weight undergone by an animal during a stated time. Such measurements show that in man, during the pre-natal period, the percentage increment in weight per month falls from 600 per cent. in the fourth month to 230 per cent. in the fifth, 130 per cent. in the sixth, and continues to diminish until at birth it is 20 per cent per month. This means at birth an annual increment rate of 240 per cent. During the first year the annual percentage increment is 200 per cent., but this has dropped to 20 per cent. by the end of the second year; thereafter it continues to decrease to about 0·1 per cent. at the thirtieth year.

There is a slight increase in the growth rate measured by this method at about the time of puberty. The limits of growth are determined by heredity and are not altered by the most abundant diet, though obviously they may be changed by insufficient diet. The growth impulse, however, regarded as an inherent property of the young animal, is to some extent independent of the amount of food taken, as experiments by Waters and Aron indicate. Waters maintained young cattle at a constant weight for twelve months by insufficient feeding and noted that, although there was no change in weight, the animals gained 10 per cent. in height, 20 per cent. in the length of the head, and 9 per cent. in the depth of the chest. Along with these increases, there was a decrease of 12 per cent. in the width of the chest. Aron's experiments carried out with young dogs from the same litter gave similar results. One set of the dogs was given the amount of food requisite for complete nutrition; the other set was underfed to just such a degree that the weight remained constant. Under these conditions the underfed animals continued to increase in width and height until their reserve substances were used up, after which there was a second period during which no growth took place but only maintenance of size. An examination of the percentage of dry matter in the various tissues after such a period of underfeeding showed that the brain, central nervous system, and bone had been most protected from loss, but that there was a large increase in the percentage of water in both blood and muscle. Aron concludes from these results that the growth impulse resides in the bones and that other tissues only increase in size because of the growth in the bony structures. One interesting point which was not determined was the relative evolution of the sex organs in the two cases; it was noted, however, that the underfed dogs had a cry like young dogs as opposed to the deep-toned bark of their brother animals. Measurements made by Fleischner of the weight and height of normal and underfed infants have also brought out the fact that growth is to some extent independent of nutrition, since the underfed infants had a greater height to weight ratio than well nourished infants of the same weight. Whereas the animals used by Aron and Waters in their experiments showed growth on diets containing an insufficient amount of energy, the experiments carried out by Osborne and Mendel on young rats show that *no growth takes place even when the calorific value of their food is abundantly sufficient for purposes of growth.* For instance, a young rat taking glutenine as the sole protein together with a sufficient amount of carbo-

hydrate, fat, and salts showed no growth during one hundred and twenty days. In animals such as this one the ratio of length to weight was the same as that for normal animals. Other rats kept on gliadine as the sole protein in their diet remained without growth for fifty days, although the energy value of the food given was quite adequate for growth. On placing these animals on mixed food, *growth immediately began and continued at the normal rate.* These experiments indicate very clearly that there are *qualitative* factors in diet which influence growth, and further, that the growth potential is not influenced by fifty days' stunting, since animals stunted in this way began to grow at the normal rate for their age when given ordinary mixed food. The question as to whether such stunting, either by underfeeding or by unsuitable feeding, has any influence on the intelligence of the animals is not yet determined. Analysis of the brains of the rats stunted by Osborne and Mendel showed that they contained a larger percentage of dry matter than was normal for their age. This has also been shown to be the case by Donaldson in underfed rats. Whether such animals are more or less intelligent than they should be for their age is difficult to determine; but Donaldson has shown that if the food is made more difficult of access the underfed rats learn how to get it just as quickly as normal animals. In man, a statistical enquiry as to the relation of general intelligence to malnutrition in the early years of life might provide the requisite information in this matter. Superficially it might appear that the proverbial "cuteness" of the street arab of our large cities might be due in part to under-feeding.

Being unable to obtain growth in young rats by giving food containing casein as the only protein, and taking into account the fact that casein is their chief source of protein in a diet of milk powder, starch, and lard, on which they grow perfectly, Osborne and Mendel turned their attention to the non-protein constituents of the diet. A powder was prepared by separating the fat and proteins from milk and evaporating to dryness. This product, which they term "protein-free milk," and which contains at the most 1·7 per cent. protein, was used instead of the artificial salt mixtures previously given. The adoption of this mixture as an adjuvant to previous mixtures of carbohydrate and fat with a single protein proved an unqualified success. The use of it along with many single proteins has given normal growth. In cases of maintenance experiments with adult rats in which decline had begun, the decline was immediately arrested, and maintenance again established. In fact so certain were the results it yielded, that if the use of any

single protein together with "protein-free milk" did not give adequate growth or maintenance, as the case may be, it was assumed that the protein itself was the defective constituent of the diet. By the use of this adjuvant to diets containing only one protein many interesting facts concerning the nutritive value of the separate proteins have been established. The proteins can be divided into two groups; those adequate for growth and those inadequate for growth. The chief proteins in the latter class are, gliadine, the alcohol-soluble protein of wheat; zein, one of the proteins of maize; and gelatine. Of these three, gliadine is adequate for maintenance whereas zein and gelatine are not, presumably because, unlike gliadine, they contain no tryptophane. Another important fact established is that, fed on casein, although it does not contain the amino acid glycocoll, rats will grow quite normally. Edestine, the protein of hempseed, is phosphorus-free but is quite as successful in promoting growth as casein, thus proving that the animals can synthesise all the *organic* phosphorus compounds they require. Further, Osborne and Mendel have been able to show that rats will grow perfectly on a diet containing no fat. Two diets were used in this experiment, one containing casein, sugar, starch, and "protein-free milk," and the other, edestine, sugar, starch, and "protein-free milk." A further important point which these investigators claim to have established is that the "protein-free milk" may be replaced by an artificial mixture of the various salts it contains in about the same proportions. Using this salt mixture along with casein, sugar, and starch, but without any fat in the diet, normal growth was obtained for one hundred and sixty days. The presence of fat in the diet is thus dispensable for purposes of growth.

One remarkable experiment was carried out which substantiates the results previously obtained with the protein, gliadine. Two adult rats, male and female, were maintained for one hundred and fifty days on a diet containing this substance as the only protein. They were then paired and a litter of four resulted. At the end of the suckling period, in which the young grew normally, three of the four were placed on a mixed diet and continued to grow well. The fourth was placed on the same diet its mother was receiving, i. e. one containing gliadine as the sole protein, and it immediately ceased to grow. It was evident therefore, in this case, that out of the gliadine the mother could synthesise something necessary for growth since the young grew normally during the suckling period, whereas the young rat was unable to synthesise this essential substance, since it ceased growing as soon as it was placed on the

gliadine food. Nothing could be more convincing than this of the importance of accessory factors in nutrition. That such factors exist we can now have little doubt, but exactly what they are remains for future experiment to show.

Because of the immediate success in production of true maintenance and growth following the use of "protein-free milk" in their diets, Osborne and Mendell lay stress upon the necessity for having the requisite salts in the right proportions if any diet is to prove satisfactory. This view they base upon their use of the "protein-free milk," and in later experiments upon the use of a pure salt mixture made up to imitate as nearly as possible the composition of the salts in the "protein-free milk," since with this latter mixture they have obtained normal growth in young rats. An altogether new light has been thrown upon the question by Hopkins, who last year published experiments on the growth of young rats when fed with food substances which had been purified by thorough extraction with alcohol. The protein used in these experiments was casein, the carbohydrates starch and cane sugar, the fat was lard, carefully freed from tissue elements, and the salt mixture was obtained by imitating the ash of mixed food upon which the rats grew normally. Due regard was paid to the calorific intake. A group of six rats placed upon such a diet grew slowly till the thirteenth day, then declined, and by the twentieth day five of the six were dead. A control group of six rats placed on the same food but receiving in addition 2 c.c. of milk each per diem grew quite normally and had doubled their weight before the twentieth day. In a second experiment, using the same "pure" diet, the set of rats receiving the small addendum of milk grew quite normally whereas the other set declined. On the eighteenth day the diets were reversed. By the twenty-fifth day the previously growing set had ceased to grow whereas the set which had begun to decline was growing quite well. In other experiments in which the casein was not specially purified by very thorough extraction with alcohol, slow growth was obtained but was not so rapid as that of rats receiving the same food with the addition of 2 or 3 c.c. of milk per day. In reply to experiments by Osborne and Mendel in which casein extracted with ether was used, and produced growth, Hopkins and Neville have recently published an account of the feeding of twenty rats upon the same diet with the exception that the casein and starch were thoroughly extracted with alcohol and the lactose used was also specially purified. In all the rats growth rapidly ceased, then followed a period of decline, and by the

fortieth day fourteen of the animals were dead. To six of the rats, after their weight began to diminish, 2 c.c. of milk per day were given, when the decline ceased and normal growth was soon established.

From these experiments we may conclude with a fair degree of certainty that the growth of a young animal is dependent upon the stimulating action of some active substance, or substances, which the animal is unable to synthesise during the early period of its life, and which therefore must be furnished in its food. In the case of suckling animals the active principle is present in the mother's milk. That it is also present in the yolk of eggs is likewise probable, since Socin as long ago as 1891 showed that mice may be maintained for several months on this food alone, and McCollum has also shown that young rats grow well on egg yolk and distilled water. But the active substances must have a wider distribution, for Hopkins in his experiments on the growth of rats on "pure" foods noted that vegetable extracts, and also an alcohol and ether soluble substance from yeast, were very successful in promoting growth. How such substances act is at present only a matter for speculation, and probably will remain so until their isolation is accomplished. We already know that certain of the ductless glands have a marked influence on the growth process, and it may be that these glands are stimulated by the active substance or that it forms an essential part of the raw material from which their secretion is manufactured. But it is also conceivable that the action is a direct one on the tissues themselves.

That the processes of growth are intimately related to dietetic factors is a new conception which will have to be taken into account in future studies on animal nutrition. We have long been aware of the relationship between certain diseases,—notably rickets and scurvy,—and faulty dietetic conditions, and more recently the disease beri-beri has been added to the list. Beri-beri may be produced in birds by a diet of polished rice, the prominent feature of the disease being a peripheral neuritis. If the rice polishings are given along with the polished rice, then the birds remain healthy. Funk has succeeded in isolating from the rice polishings an active substance, provisionally named "vitamine," minute amounts of which will cure the peripheral neuritis produced in birds by a diet of polished rice. This disease therefore has been shown to be dependent for its production, not on gross errors in the diet such as an incorrect relation between the amount of protein, carbohydrate, fat and salts, but upon the absence from the food of minute amounts of some specific substance. Since lime juice is well known to cure

scurvy, it does not appear unlikely that its curative properties are due to the presence in it of some specially active body, but that this is not "vitamine" has recently been shown by Funk. Such work as has already been accomplished in this comparatively unexplored field enables us to look forward with confidence to a not too distant future, when our knowledge of the factors concerned in correct nutrition will provide a suitable basis on which a sound practice of dietetics may be built up.

HENRIQUES and HANSEN, *Zeits. f. physiol. Chem.* xliii, 417; liv, 169; lx, 105.
WILLCOCK and HOPKINS, *Journ. of Physiol.*, xxv, 88.
STEPP, *Biochem. Zeits.*, xxii., 452; *Zeits. f. Biol.*, lvii, 135.
OSBORNE and MENDEL, *Carnegie Institute Publications*, 156;* *Zeits. f. physiol. Chem.*, lxxx, 307; *Journ. Biol. Chem.*, xii, 81; —447; xiii, 233.
WATERS, *Proc. Soc. Prom. Agric. Sci.*, xxxix, 3.
ARON, *Biochem. Zeits.*, xxx, 207.
HOPKINS, *Journ. of Physiol.*, xliv, 425.
HOPKINS and NEVILLE, *Biochem. Journ.*, vii, 97.
FUNK, *Journ. of Physiol.*, xliii, 395; xlv., 75; *Biochem. Journ.*, vii, 81.

*An excellent bibliography is to be found in this publication.

A DRAFT of a proposed agreement between the city of Calgary and the hospital board was submitted to the city council on March 25th. By this agreement a board of control is to be formed, which will govern all hospitals except private ones, until such time as the city shall have spent $300,000 on permanent hospital property. If the board then considers it advisable to make a change in the administration of the hospitals, the matter will be submitted to the ratepayers and a municipal hospital established or not as the voters may decide. In this connexion a legal difficulty has arisen as to whether the hospitals have the right to transfer their property to the city. This question is now under consideration. The board of control will consist of three subscribers, four medical men, and six citizens; but the latter are to be appointed by the city council and not elected by vote.

TUBERCULOSIS OF THE GENITO-URINARY SYSTEM FROM THE GENERAL PRACTITIONER'S STAND-POINT

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THE subject of tuberculosis of the genito-urinary system is one which has received comparatively little attention in comparison with its sister disease in the lungs. The latter has been written about and studied for many centuries, Hippocrates, during the fourth century B.C., having described a condition of the lungs which was undoubtedly tuberculosis, and Areteus, in 250 B.C., along with many Greek writers, having discussed it. Celsus at the beginning of the Christian era recommended climatic treatment, and Galen in the second century advised patients suffering from this lung affection to go to a dry climate and make milk their chief diet. There was practically nothing of importance written from that time until 1650, when Franciscus Sylvius gave the first accurate description of the tubercle in the lung. In 1845, Addison gave the first histological description of the tubercle, and in 1882, Koch discovered the tubercle bacillus. Thus it is to be noticed, that in spite of all this work done on tuberculosis of the lung, the genito-urinary system was overlooked until the beginning of the nineteenth century, when Bayle compared the tubercles in the lung with those in the kidney. However, it was not until about twenty-five years ago that anything was really known about the condition.

Those who have been following medical literature during the past ten years must have been impressed with the number of articles which have been written on certain aspects of the subject, for example, the early pathology and the expert method of diagnosis. The latter consist of radiography, cystoscopy, ureteral catheterization and the many tests of the functional capacity of the kidneys. The advance in these methods is extremely interesting and their importance cannot be overestimated as they have given us an accurate knowledge of this disease and have showed

where the older writers erred. My reasons for writing another paper on this subject are twofold. In the first place this is an attempt to bring the knowledge obtained by these means down to the terms of ordinary clinical methods, and in the second place to give this serious disease its proper relation to other conditions which tend to simulate it.

ETIOLOGY: The immediate cause of tuberculosis of the genito-urinary organs is the same as that of any other organ, namely, the tubercle bacillus. The predisposing causes are two: injury and inflammation. In the case of the kidney and bladder, inflammation is the chief factor, whereas in the case of the testicle injury plays an important rôle. Here I might point out that cases of persistent pyuria following an attack of gonorrhœa should be looked upon with suspicion and a careful examination of the urine made for tubercle bacilli. As to the age in which tuberculosis occurs, I might say that no age is exempt, but the great majority of cases occur between the ages of twenty and thirty. In a series of 138 cases in the Royal Victoria Hospital, 118 occurred in those under forty years of age. The relation of male to female is rather interesting from a historical point of view. The statistics of the pathologists and surgeons differ considerably. The pathologists found a larger percentage of males in the autopsy records, whereas the surgeons found the reverse in the operative records. Our statistics show that out of a series of 84 cases in which a diagnosis was made of tuberculosis of the kidney or bladder, 54 occurred in males and only 31 in females. Occupation has apparently very little effect on the disease, and what is very remarkable is the fact that more of our cases came from the country than from the city.

PATHOLOGY: When we consider the subject from a pathological standpoint we are at once brought face to face with some very interesting problems. In the first place the question arises as to how the tubercle bacillus reaches these organs, and in the second place which portion of these organs is first attacked. Let us first consider the path by which the bacilli reach the kidney. Here let me explain a term which is rather confusing, namely, "primary tuberculosis of the kidney." The word primary does not apply to the body as a whole but to the genito-urinary system, as there is practically always a lesion in some other part of the body which antedates that in the genito-urinary organs.

When the subject first came into notice everyone believed that the primary seat of the disease was in the bladder and that the kidney was secondarily infected. The reason for that error

is quite obvious when one considers that the surgical treatment of tuberculosis of the genito-urinary tract was practically nil, and that the specimens examined were those recovered at autopsy which naturally showed extensive lesions of the whole tract. Then again, the majority of symptoms are referable to the bladder, and as there were at that time no adequate methods of examining that organ, it was concluded that it was there the disease originated. With the advent of the newer methods of examining the bladder and kidneys, this idea was found to be erroneous. At the present day it is believed that the majority of cases of tuberculosis of the urinary system originate in the kidney and secondarily involve the bladder. I might even go farther and say that I believe that tuberculosis of the whole genito-urinary system originates in the kidney and secondarily involves the bladder, prostate, seminal vesicles and testicles. This statement presupposes that all tuberculous infections of the kidney are descending. However, an ascending infection may take place in the second kidney, which was supposedly healthy, when an obstruction to the outflow of urine from the bladder takes place, or its walls become extensively diseased. In the case of the testicle, I believe that in the great majority of cases the disease is secondary to that of the prostate or seminal vesicles, which, again, is secondary to primary disease of the kidney. At the present time I am bound to admit that occasionally the epididymis becomes primarily involved, the infection being carried there through the blood stream.

Let us now turn to the second question and consider at what point in these organs the disease originates. In the case of the kidney the small blood vessels come off at right angles from the larger ones and finally break up into glomerular coils. As a result of this peculiar construction the bacteria may be arrested at either of these points and there form tubercles. If the bacilli succeed in passing these points they may become arrested in the loops or collecting tubules; this latter form is known as the excretory type of tuberculosis. There is a rare type which is worth noting, viz., papillary ulceration described by Albarran. The end result of the tubercles is the same as in other organs, a number of them coalesce, break down, and form caseous masses. In some cases they are scattered here and there throughout the kidney, whilst in others they are situated in one or other of the poles. Sooner or later some of these masses burst into the pelvis producing a pyelitis and ureteritis. In those cases in which the ureter becomes early involved, or a large plug of caseous material blocks the lumen, the

whole kidney becomes converted into a caseous mass enclosed in the kidney capsule. Healing of a tuberculous lesion of the kidney has rarely been demonstrated, but it is possible that some of the old scars found in kidneys removed at autopsy may be the end result of small tuberculous lesions.

Tuberculosis of the bladder originates in two ways: first as submucous tubercles, and secondly as a graft on an injured surface. The tubercles later break down and burst through the mucous membrane leaving the typical punched-out ulcers.

In the case of the testicle the lesion always originates in the epididymis and usually in the tail. Here the tubercles follow the same course as in other organs.

SYMPTOMS: We will leave now what might be considered the scientific side of the subject and turn to the practical side. This part of the subject may be divided into the signs and symptoms of genital tuberculosis and urinary tuberculosis. In the male the genital form can be detected with comparative ease, whereas the urinary form presents far greater difficulties in diagnosis. We will therefore for the present turn our attention to the latter form. At the outset I wish to lay great emphasis on the necessity of careful history taking in all urinary cases, as I believe that in the majority of cases a diagnosis can be reached by that means. At the present time when there are so many expert methods employed as aids to diagnosis we are losing sight, both in teaching and in practice, of the importance of the old clinical methods. Then again, the reason that we cannot interpret symptoms aright, is that we tend to collect them indiscriminately, and do not give to each its proper value. How then is it possible to say which symptom or sign is the most important? This should be done by leaving out of consideration those symptoms and signs which are of comparatively recent date and going back to the earliest symptom or sign noticed. This symptom or sign is the one which is of the greatest importance.

In this relation let me cite briefly a case which came under my notice during the past year. The patient, a man sixty years of age, came to the hospital complaining of marked frequency of micturition which was accompanied by severe pain. Examination of the urine showed it to be extremely dirty. The right kidney was markedly enlarged to palpation and was distinctly tender. The cystoscopic examination showed an enlargement of the prostate, with chronic cystitis but no ulceration of the bladder. The skiagraph revealed a uric acid calculus in the pelvis of the kidney.

To all appearances this was a case of calculus pyonephrosis. However, when we went back in the history to the commencement of his symptoms, which was twelve years previous, we found that during the first two years he had only one symptom and one sign. The symptom was frequency of micturition and the sign pus in the urine. Upon these two a diagnosis was based of tuberculosis of the kidney with secondary stone formation, and this diagnosis was confirmed at operation. I consider this symptom and sign as pathognomonic of tuberculosis of the kidney. In our series of forty-four definite cases of renal tuberculosis, frequency was present in all the cases and was an early and prominent symptom. It is always present at night (unlike that of vesical calculus); it is only slightly increased by exercise, and then only after some secondary condition has supervened, such as ulceration of the bladder. In the early stages this frequency is usually unaccompanied by any other symptom; however, very shortly a burning is felt in the urethra during micturition, and later some pain at the tip of the penis at the end of the act. These are the symptoms which give rise to the impression that the seat of the trouble is in the bladder and therefore a diagnosis is usually made of cystitis. The term cystitis has been and is being used too indiscriminately, and for that reason cases are being treated for a long time as if the bladder was the seat of the disease, when in reality the condition was one of renal disease. Let us remember that cystitis has definite causes and that in men under forty the causes are few in number.

In order to fix our attention on the important symptoms and signs let us next consider the urinary findings, as they present the next important link to diagnosis in the early stages of tuberculosis. The most important pathological element is pus. In the early stages of the disease this may be microscopic in amount, and is due to the irritation of the kidney produced by the tubercle bacillus. Very shortly the pus becomes macroscopic, this being due to the tubercles breaking into the tubules, or to a cavity having ulcerated into a calyx.

Having considered the pathognomonic symptoms and signs of the disease let us turn to a brief consideration of those which might be designated as secondary; the first of these is pain. This is a very variable symptom in so far as it is referable to the kidney region, and when it does occur, it may vary from a dull ache to the acute pain of renal colic. In our series of forty-four cases, it was only present in this region in fifteen. There is, however, another situation in which pain occurs sooner or later in the course of the

disease; this is in the urethra during or at the end of micturition, and is burning in character.

Another symptom which is fairly constant, occurring in thirty out of the forty-four cases, is hæmaturia. This symptom is again very variable in character, as sometimes blood will occur intimately mixed with the urine, whilst at other times it will show up as a few drops at the end of the act of micturition. It is very rare that any great quantity of blood is passed or that the bleeding lasts for any length of time.

As to the general examination of the patient, I may say that in the early stages this gives, in the great majority of cases, a negative result. This is the striking feature of the disease, that, whereas there is this nocturnal and diurnal frequency and pus in the urine, there is an absence of any other symptom or sign. In the later stages the patient may have the general appearance of a man suffering from tuberculosis in any part of the body. If he has reached the stage in which the frequency and pain on urination is extreme, his expression will be haggard and drawn, and his general condition will be worse than the disease itself would account for. Palpation may elicit tenderness in the loin and at times a mass can be felt. However, one must not jump at the conclusion that because a large kidney is felt on one side that that is the kidney which is diseased. On the other hand it may be the healthy one which has hypertrophied in order to compensate for a destroyed kidney on the other side.

The majority of cases can be diagnosed without going any further, but if after a careful investigation of the patient a positive diagnosis seems impossible, then there remains the examination of the urine for tubercle bacilli, and an examination of the bladder by means of the cystoscope. The first should be done by drawing off the urine with a catheter in order, as far as possible, to avoid contamination by the smegma bacillus. Next let me say a word about the cystoscope. Although this is classed among the expert instruments, yet at the present day it is a practical instrument in the hands of any practitioner who can pass a sound. I mean by that, that it is practical in so far as determining whether or not a tumour or stone exists. In the case of tuberculosis the picture varies with the stage of the disease. In the early stage only congestion of the trigone may be noticed; later small white spots in the vicinity of one or other ureter can be made out; still later definite ulceration of the bladder is quite apparent.

At this stage let us consider briefly the two conditions which

must be differentiated from tuberculosis, viz., renal calculus and vesical calculus. In the first place let me correct an error which is very prevalent, that is, the idea that tuberculosis of the kidney is a rare disease, much rarer than either of the other conditions. In reviewing the number of cases in the Royal Victoria Hospital during the past eighteen years which were diagnosed as tuberculosis of the kidney or bladder, I find there were 84 cases as against 86 of vesical calculi and 75 of renal calculi. This does not include a number of cases which were probably tuberculous but were not definite enough to record. On account of this erroneous idea the majority of practitioners consider the condition as one of calculus, and only after excluding by all the means at their disposal, that possibility, do they think of tuberculosis. In this way they frequently waste a great deal of valuable time and often do considerable injury to the patient.

Let me reiterate the statement that frequency of micturition, occurring at night, is the earliest and most prominent symptom in tuberculosis of the urinary tract. Whereas, in the case of stone in the bladder this nocturnal frequency only occurs when some complication, such as hypertrophy of the prostate or a very severe cystitis, is present. In the case of renal calculus it never occurs. Pain on the other hand, is insignificant in the early stages of tuberculosis and is nearly always situated along the urethra and at the end of the penis. In vesical calculus pain at the end of the penis or at the neck of the bladder, is the most prominent symptom. Another point of interest is the difference in the age of patients suffering from bladder calculi and those suffering from tuberculosis. Out of the 84 cases of tuberculosis of the bladder or kidney, 73 were under forty years of age, whereas, in the series of 86 cases of vesical calculus 61 were over forty years of age.

When a diagnosis of tuberculosis of the bladder has been established, we at once say to ourselves, this must be primary in the kidney. Then it is that the expert methods, such as ureteral catherization and the estimation of the functional capacity of each kidney is required in order to give a prognosis and outline the course of treatment to be pursued. Ureteral catheterization is employed first of all to determine whether or not two kidneys exist, and at the same time to collect the urine from each kidney for a chemical and bacteriological examination. The tests employed for the estimation of the functional capacity of the kidneys are many and I will not enter into any discussion on the relative values of the methods, but merely say that I feel that the best of these is the esti-

mation of the time in which the indigo-carmine appears in the urine after an intramuscular injection. This is done by merely watching the indigo-carmine being excreted from the ureters and taking the time at which it appears from each one. By this means there is no reflex disturbance such as is frequently produced by the presence of a catheter in the ureter.

Let us turn now for a few moments to the genital form of tuberculosis in the male. At the present day there are two distinct theories as to the method of infection of the epididymis. I say epididymis, as it is always the first to become involved. The first is hæmatogenous and the second is by extension from the prostate and seminal vesicles. From an investigation of the cases which were admitted to the hospital, I may say that both methods exist.

As to the diagnosis of tuberculosis it is usually quite simple. A nodule appears in the tail of the epididymis which is hard but neither painful nor tender. This slowly enlarges and at an early date invades the scrotal tissues. This scrotal invasion is almost pathognomonic of the disease. There is, however, another type of the disease which is more difficult to diagnose, that is, the acute form. In this type the swelling simulates an acute gonorrhœal epididymoörchitis. In fact the only differentiating feature is the absence of gonorrhœa. This shortly subsides and then the hard mass is left which goes on as usual to invasion of the scrotal tissues.

The symptoms of tuberculosis of the prostate are merely those of tuberculosis of the bladder, and only in rare cases does it produce retention of urine. A case, however, came under my care during the past year in which there was absolute retention of urine due to a tuberculous enlargement of the prostate.

TREATMENT: Having gathered all our facts and arrived at the diagnosis, we must consider what we can do for this very serious condition. Before going any further let me emphasize the fact that we are dealing with tuberculosis, a disease, which under favorable circumstances is self-limited. We treat lung tuberculosis with rest, fresh air and good diet; we treat the early stages of gland tuberculosis with rest, fresh air and good diet; we treat the early stages of joint tuberculosis with rest, fresh air and good diet, but when we come to tuberculosis of the kidney or testicle we rush at once to operative measures, or when we find a case of primary tuberculosis of the bladder or prostate we throw up our hands and say, "It is hopeless." This latter statement may produce

some surprise but there is a reason for it, and this can be found by reviewing the stages through which the study of tuberculosis of the genito-urinary system has passed.

In the early days the condition was only recognised in the late stages of the disease and frequently only at autopsy, and under those conditions one found extensive lesions of both the bladder and kidneys. Again, in those cases where physicians recognised the condition fairly early (I say fairly early, for they never recognised it in its incipient stage) the treatment was always directed to the bladder, and thus the results were very bad. Next we come to the stage in which the cystoscope and the ureteral catheter came into use and then it was found that the disease was practically always primary in the kidney, only secondarily involving the bladder, and also that it remained unilateral for a long time. This brought about a reaction which was so extreme that we forgot about the general treatment such as rest, fresh air, and good diet, and surgeons removed the kidney as soon as the diagnosis was made, irrespective of the stage of the disease. It will assuredly be agreed that this was very radical treatment; however, there was the excuse that the condition was not recognised in its early stage. It is for that reason that I wish to emphasize a fact which was not, and, I believe, is not recognised at the present day by a great many medical men, namely, that many cases of tuberculosis of the kidney never manifest any symptoms referable to that organ, all the symptoms being referred to the bladder. It is for that reason that medical men and even many surgeons persist for months in treating these cases by means of bladder irrigations, and urinary antiseptics, and by flooding the kidneys with large quantities of fluids (all of which are deleterious), before they will have the bladder cystoscoped and the ureters catheterized. However, I believe we are coming to a more rational routine of treatment, consisting of a preliminary trial of rest, fresh air and good diet, combined with the proper use of tuberculin. But we will only reach it when the profession at large will have their patients examined early. Before such treatment is instigated we must be sure of the condition of the bladder and kidneys.

In dealing with the treatment let me divide the cases into four groups: (1) early acute cases; (2) early mild cases; (3) late cases but unilateral; (4) late cases bilateral. In the first group, that is in those cases where the symptoms are very acute, the bladder much swollen and the ureters difficult to locate, the treatment should be the same as in acute lung tuberculosis. They should have

absolute rest, that is in bed; they should be kept in the fresh air and in as dry a climate as possible; they should have nourishing diet but not large quantities of fluids; in other words, they should put as little strain as possible on the kidneys. Tuberculin should be given commencing with a dose of 0·0001 milligram. This dose should be repeated once a week until two or three have been given, and then the strength should be gradually increased to 0·001 milligram. If the symptoms are aggravated by one of these increasing doses the advance must be stopped, and smaller doses given. The key-note of tuberculin treatment is, "Never produce symptoms." By means of this treatment the disease may become quiescent, or if this is not achieved, the acute symptoms will subside and then the treatment will be the same as that to be described for cases in group three.

The second group should be treated in the same way as those in group one, save for one or two exceptions; first the rest need not imply absolute rest in bed, but no violent exercise should be undertaken; secondly, the dosage of tuberculin may be increased more rapidly. It is important from time to time to examine these cases in order to see whether the condition is improving or not, and if not, then operation is imperative.

The treatment of the cases in group three is purely operative. The kidney should be exposed by a loin incision and if there is difficulty in delivering it, or any danger of breaking the abscesses, then a transverse incision should be made towards the abdominal cavity. This incision should be made through the muscles, but not through the peritoneum, this being displaced inwards. By this means sufficient room is obtained to ligature the pedicle without any difficulty. The ureter should be followed down and excised as near the bladder as possible. Before cutting through the ureter a ligature is placed around it, and later the cut end is cauterised in order to destroy the mucous membrane, and thus to aid in firm union. When the bladder is also involved tuberculin should be employed subsequent to the operation for a considerable time, but no local treatment should be undertaken.

The cases in group four can only be treated in the same manner as those in group one. Operation, save for a nephrostomy with permanent drainage in order to relieve extreme bladder symptoms, is out of the question.

Finally let me say a word or two concerning tuberculosis of the other genito-urinary organs. The treatment of tuberculosis of the testicle should, at first, be along general lines combined with

the use of tuberculin. If, however, this is not successful the testicle should be removed, and if there is any thickening of the vas deferens it should be followed down to the seminal vesicles. Primary tuberculosis of the bladder and prostate must be treated on general principles, no operation being advisable.

In conclusion let me say that I believe the day is not far distant when men will recognise the condition in its incipient stage, and thus many kidneys will be saved which otherwise would have to be removed.

AT a meeting of the Halifax Board of Health, which took place April 30th, a report of the year's work was submitted. Particular attention has been paid to the milk supply and, in consequence, the conditions under which the milk is produced and sold have been much improved. An incinerator has been installed for the disposal of ashes and garbage, and it is hoped that this year a public abattoir will be established. The cases of contagious disease reported during the year were:—scarlet fever, 220 cases, 9 deaths; diphtheria, 247 cases, 24 deaths; smallpox, 4 cases, 1 death; consumption, 18 cases. The following meats were condemned and destroyed: 1,690 pounds of beef, 32 carcasses of mutton, 14 carcasses of lamb, 42 carcasses of veal, 9 carcasses of pork, 5 quarters of moose meat, 2,850 pounds of corned pork, 8 barrels of corned beef, 27 pairs of fowls, 369 pairs of rabbits—in all 12,150 pounds.

A CAMPAIGN is to be held next autumn with a view to collecting the funds required to complete the new buildings of the Montreal General Hospital. The extension, which contains the outdoor department and public and private wards, will be completed very shortly. This addition, together with the eastern wing, will form the nucleus of the new building. The proposed plans include also a western wing, an administrative building, and a nurses' home. The section which has been built already and which is soon to be opened provides beds for about two hundred patients.

Case Reports

TUBERCULOUS APPENDICITIS

THREE unusual cases of this affection coming to my care, I was stimulated to a study of the condition. I will briefly outline the records:

CASE 1. Male, aged twenty-four. On April 19th, 1909, I was called to operate on this patient. He had been ill two days and presented signs of an acute appendiceal abscess. Through a small incision an abscess was revealed filling the iliac fossa and extending into the right pelvis, firmly walled off. It was drained, no search being made for the appendix, nor was the peritoneal cavity seen. The temperature fell to normal in four days; appetite and general condition good. Three weeks later because of persistence of purulent discharge, the abdomen was reopened to remove the appendix whose stump was considered to be at the bottom of the sinus. The peritoneum was studded with miliary tubercles, the appendix had sloughed off close to the cæcum and had healed over. No thickening of the intestine in the neighbourhood could be found which would suggest any mucous lesion. Five weeks later he developed left sided pleurisy with effusion. Upon his improvement he was moved to Ste. Agathe, whence he returned and began work in January, 1910.

The fistula continued to discharge a small quantity, and methylene blue solution injected into it appeared in the stools, but methylene blue given by mouth failed to colour the pus, demonstrating the presence of a track between skin and bowel but with valvular formation to prevent egress of bowel contents. The fistula closed after eighteen months leaving a small ventral hernia for which a belt is worn.

Personal History: When eight years of age he fell on a picket fence causing hæmaturia and injury to the right testicle. This laid him up a week, and was followed by hydrocele for which he was tapped at the ages of fourteen and seventeen, with cure. A small encysted hydrocele remains, but neither testicle nor epididymis presents any signs of tuberculous disease. Four years

Read before the Montreal Medico-Chirurgical Society, March 28th, 1913.

previous to present illness he was ill for two weeks with acute appendicitis, since which time he had suffered from vague discomfort in the iliac region. When twenty-three years of age he was ill one month with pericarditis.

Family History: Negative.

Subsequent Course Patient is strong and well, much heavier than formerly. In October, 1911, he was seized with acute abdominal pain, associated with vomiting, rise of temperature, tenderness in the right iliac fossa and rapid development in that region of a firm tender mass. Rest in bed and application of ice allowed the symptoms to subside; the mass rapidly disappeared, and in twelve days he was at work. Again in August, 1912, a similar condition developed, but of a milder type, from which he was fully recovered in five days. After these attacks careful examination revealed nothing abnormal and I can but explain them as being a perityphlitis due to a small lesion (probably tuberculous) in the cæcum.

Case 2. Female, aged twenty-seven; married; no children. Lives in the country and was referred to the Montreal General Hospital on July 23rd, 1912. She had been ill four days with acute appendicitis, first attack. Previous history negative.

She was admitted to my service, but during my temporary absence from the city was operated upon by Dr. George Shanks, the medical superintendent. The condition found was appendicitis of the simple acute type. The appendix was removed, the stump cauterized and invaginated, and the abdomen closed without drainage. A few days later the wound broke down and discharged pus with characteristic fæcal odour and giving cultures of bacillus coli. On August 8th, methylene blue by mouth appeared in the discharge. The temperature was of the remittent type, ranging from 101° and the patient was emaciating rapidly. On September 9th, as the fistula persisted and no other cause for the temperature could be discovered, the patient was anæsthetized and the wound re-opened. An irregular cavity beneath the skin and between the muscle layers was revealed, lined by a thick pulpy granulation tissue. This was removed by friction with gauze, and in the process the peritoneal cavity was opened. Miliary tubercles were thickly studded over the surface. The cæcum was identified and an opening into its cavity disclosed. This was at the site of the appendix attachment. The fistula was closed and invaginated and the wound packed with gauze. Reëxamination of the removed appendix showed a minute tuberculous ulcer of the mucosa.

In four days the temperature had become normal, the patient was eating well, in good spirits and gaining rapidly. She was discharged on October 15th to continue her convalescence at her country home. The wound had not completely healed. A personal communication from Dr. H. R. Clouston states that she died in January, 1913, of a generalised tuberculosis. The wound had not healed but the fæcal fistula had not recurred.

CASE 3. Male, aged twenty, patient of Dr. A. H. Gordon. Has been ill with pulmonary tuberculosis since the fall of 1910, and at the present time the disease is bilateral and extensive; has been in bed constantly since December 1911. On June 13th, 1912, he was wakened at 3 a.m. by violent abdominal pain associated with vomiting. He was seen in the forenoon by Dr. Gordon, who diagnosed appendicitis. The absence of his father from the city occasioned some delay, and it was 8.30 p.m. before the patient came to the operating table. He presented a rigid abdomen with general tenderness, more marked over the right side. Under spinal anæsthesia the abdomen was opened, free pus (yielding cultures of bacillus coli) was evacuated by suction, and a large pulpy appendix, gangrenous and perforated, hanging over the pelvic brim, and adherent to posterior pelvic wall, was removed.

Pathological report: Tuberculous appendix; acute gangrenous perforation.

No fæcal fistula developed in this case but a sinus leading into the pelvis along the track of the drainage tube persisted for months. At the time of writing, Dr. R. C. Paterson, Ste. Agathe, reports that the sinus is firmly closed, but the pulmonary disease is unimproved.

It is not my intention to deal with the subject of *simple* appendicitis occurring in those affected with pulmonary tuberculosis, any unusual frequency in this class of patients is, I think, explained by overfeeding, combined with inactivity causing digestive disturbances or a certain amount of catarrhal enteritis in which the appendix is involved. But I will consider only such cases as demonstrate an actual tuberculous lesion in the appendix.

The records of the Montreal General Hospital, Pathological Department (supplied by Dr. A. M. Burgess, pathologist), show that from 1906 to 1912, inclusive, there were found but three appendices showing tuberculous disease. Two of these were removed from Cases 2 and 3, forming the text of this paper, the third was found at autopsy in a patient dying of pulmonary tuberculosis

and presenting multiple lesions of the intestinal mucosa. During the same period there were 1,259 appendectomies giving a percentage of tuberculous lesion of but 0·16. As regards the percentage in pulmonary tuberculosis the figures are not conclusive, inasmuch as the hospital mentioned does not admit to its wards cases of pulmonary tuberculosis. In Nothnagel's "Encyclopedia of Medicine" various authorities are quoted whose autopsy findings of intestinal ulceration (tuberculous) in cases of pulmonary phthisis ranged from 30 to 90 per cent.

The study of the subject can be approached from two avenues, the pathological and the clinical.

Pathologically there are two types, the ulcerative and the hyperplastic. In both, secondary infections may mask the primary condition.

Ulcerative tuberculous appendicitis is the more common type. It may be primary, but usually is secondary to pulmonary disease or tuberculous ulceration of the intestinal tract (Kelynack). Rarely it presents the only intestinal lesion secondary to a pulmonary tuberculosis, but it may entirely escape even when extensive disease involves the cæcum (Kelly). Fenwick and Dodwell report 2,000 autopsies on pulmonary tuberculosis with the intestinal lesion in seventeen limited to the appendix. When exposed by operation the serosa usually presents no characteristic appearances. The organ is thickened and enlarged and the surface vessels tortuous and dilated as in simple chronic or subacute appendicitis. On section the caseating tubercles and ulcers may be apparent to the naked eye, or it may require careful microscopic examination to discover them. The regional lymph glands are usually involved which helps to reveal the true nature of the infection.

The *hyperplastic* type: Here the appendix is almost always secondarily involved in similar disease of the ileocæcal region; but rarely is it the seat of the primary lesion, and still more rarely is the disease limited to the appendix. Kelly instances but one case, reported by Crowder, in which the disease was confined to the appendix. The gross appearances are those of a much thickened and indurated appendix. The serosa is unchanged, except that through it may be seen discoloured areas of the subserosa which have undergone degeneration or hæmorrhage. On section the mucosa is not much affected, the submucosa, which is greatly thickened, being the chief site of the disease, which is evidenced by numerous tubercles in various stages of development and retrogression. Fibrous tissue predominates and the layers of the appendix wall are blended

and indistinguisable one from the other. It may easily be confused with neoplasm of the appendix but the thickening is distributed around the whole circumference of the organ and gradually merges into the normal, whereas in neoplasm the thickening is eccentric and more abruptly limited.

For the same infective agent to present two such widely divergent series of changes in the appendix demands an explanation. The one offered by most authorities is that in the ulcerative type there is little or no resistance to the progress of the disease, hence the lesions show no attempt at localisation or repair. There are usually found elsewhere in the body other tuberculous lesions showing the same rapid development. In the hyperplastic type, however, the resistance index is high, frequently there may be detected, clinically or at autopsy, either a healed pulmonary or glandular focus, or one that is almost inactive. Therefore restrictive and reparative processes are instituted about the lesions in the appendix leading to fibrosis and increase in size.

Clinically, tuberculous appendicitis presents no characteristic symptoms or signs distinguishing it from simple chronic appendicitis. Vague discomfort in the iliac fossa with slight tenderness and reflex gastric disturbances may be the only symptoms present. Temperature may or may not be elevated, is unreliable as a diagnostic aid, and is usually due to the activity of some other lesion. Tuberculin is of little assistance.

A mild secondary infection may present the picture of recurring catarrhal attacks, and a more severe infection that of an acute attack and one developing with more than the average rapidity. Occasionally the disease will escape secondary infection, limiting adhesions are formed and a cold abscess develops in the iliac fossa. Especially in patients affected with an active pulmonary tuberculosis are these preliminary symptoms apt to escape detection. In those the subjects of advanced pulmonary tuberculosis an acute appendiceal lesion may supervene with almost no symptoms and may even advance to perforation and general peritonitis without recognition. Maurice Brelet states that "in phthisical patients general peritonitis may escape detection. Rapid fall of temperature, slight meteorism, indefinite and diffuse pain, with vomiting, may be the only symptoms." Ordinarily, however, the classical signs of simple acute appendicitis declare themselves (Maizard).

It might be well here to briefly refer to the relation existing between tuberculous lesions of the appendix and tuberculous peritonitis. In but very few instances does a mucous lesion in the appen-

dix exist as the causal factor in the development of a generalised tuberculous peritonitis, but where such a condition is discovered the removal of the appendix is the first step toward recovery. On the other hand, where in generalised tuberculosis of the peritoneum the serous surface of the appendix presents miliary tubercles without evidence of a mucous lesion, no good can be derived from an appendectomy, unless it seems probable that distortion of the appendix by adhesions may precipitate an acute attack and thus introduce the dangerous element of a secondary infection. Whenever such operation is performed great care must be exercised in separating adhesions and covering raw surfaces and the stump, otherwise fæcal fistula is prone to follow (English).

A further question which arises is the advisability of operation upon a case of pulmonary tuberculosis presenting signs of a chronic appendicitis. The arguments advanced against operation are:

1. The appendix, if tuberculous, in all probability is not the only intestinal lesion.
2. Interference with "the cure" (by which term I mean the climatic and dietetic regimen) by necessary restrictions after operation.
3. The irritation of an anæsthetic upon the lungs.
4. Danger of the fæcal fistula owing to poor reparative powers.

To meet these objections it may be stated that in a patient more or less inaccessible to surgical aid, the anxiety caused by the knowledge of his possessing a "chronic appendix" militates against his recovery to good health; that the dangers of fæcal fistula can be overcome by special attention being given to technique, whereas if the case suddenly becomes acute and requires operation, the risk of fæcal fistula would be far greater; that convalescence after operation is established in less than one week; that with gas-oxygen anæsthesia, or better under spinal analgesia, irritation to the diseased lung is reduced to a minimum or is absent. Each individual case must be judged upon its merits.

Conclusions :

Tuberculosis of the appendix may exist without giving rise to symptoms, or at most to those of a chronic or a recurring catarrhal appendicitis. Careful frequent supervision of the abdomen is necessary in all cases of active and advancing pulmonary tuberculosis.

Acute symptoms may suddenly arise owing to a secondary infection. The case may then follow the course of acute simple (Case 2.), perforating with generalised peritonitis (Case 3.), or gangrenous with abscess (Case 1.).

Operation on these acute cases is liable to be followed by fæcal fistula, which may cause much chagrin to the surgeon unless microscopic examination of the appendix has revealed the tuberculous nature of the disease (Case 2.).

There are almost invariably other tuberculous lesions present.

NOTE: Since preparing this paper an additional case has been brought to my attention. It occurred in the service of Dr J. Alex. Hutchison in the Montreal General Hospital and will be reported by him.

It is of that rarer type of hyperplastic tuberculosis usually associated with ileocæcal tuberculosis and but seldom primary in, or localised to, the appendix. The patient is a male aged thirty with no other discoverable tuberculous lesion, but between the ages of eighteen and twenty he suffered from pain in the right chest with cough and expectoration. At operation a simple appendectomy was performed, the cæcum not being encroached upon by the disease.

Bibliography:—

BRELET, "Archives Générales de Médecine," *Med. Review*, April, 1905.
ENGLISH, "System of Treatment," Latham and English, Vol. ii, p. 411.
FENWICK and DODWELL, *Lancet*, 1894.
KELLY, "The Vermiform Appendix and Its Diseases."
KELYNACK, "Pathology of the Vermiform Appendix."
MAIZARD, *Medical Review*, 1900, p. 685.
SARGENT, PERCY, "Choyce's System of Surgery," Vol. ii, p. 556.

Montreal ALFRED T. BAZIN

Editorial

THE ANNUAL MEETING

ATTENTION is called to the provisional programme which is published in this issue, and which gives evidence of advanced progress in the preparation for the meeting in London, Ontario, June 24th to 27th. A programme, which includes the names of such men as Dr. Paterson, of London, England; Drs. Billings, Ochsner, and Murphy, of Chicago; Drs. Barker and Cullen, of Johns Hopkins; Dr. Stockton, of Buffalo; and Dr. McLean, of Detroit, as well as a large representation of distinguished Canadian physicians from all parts of the country, should attract a large concourse of medical men to this meeting. The revised programme will be furnished in due time to all who are to take part. The popularity of London as a convention centre, the recognized hospitality of its citizens, and the attractiveness of the city itself and its surroundings, leave nothing to be desired to ensure the medical profession of Canada a delightful holiday outing, as well as a scientifically profitable meeting. The medical fraternity of London are sparing no pains to make this the most successful of all the meetings of the Association, and their efforts are deserving of a hearty response on the part of the profession throughout the Dominion.

Reduced rates on the convention certificate plan, details of which were published in the May issue of the JOURNAL, will be available from all points in Canada for physicians and members of their families accompanying them. The rate will be single fare for the return journey, provided there is a travelling attendance of three hundred. Special attention is directed to the fact, that to take advantage of this reduction it is necessary when purchasing a ticket at the commencement of the journey, to procure from the ticket agent a pro-

perly receipted standard certificate. From Fort William, Ontario, and all points east, tickets for the going journey must be purchased between the dates June 20th and 26th, both inclusive, and properly validated certificates will be honoured for tickets for the return journey up to and including July 1st. From points west of Fort William in Ontario, Manitoba, Saskatchewan, and Alberta, these dates will be June 18th to 22nd, and July 12th, respectively. From points in British Columbia the Canadian Pacific Railway has granted the Association the convention certificate rates. The only dates on which tickets may be purchased are June 18th, 19th, and 20th, and *not* June 16th to 20th, as published in last month's issue. Certificates for the return journey will be honoured at London or Toronto, up to and including July 12th. For those to whom the time-limits or other restrictions may be inconvenient, the summer tourist rates, approximately a fare and a third, will be available over both the Canadian and American transcontinental lines.

All the members, except those who may desire to prolong their journey beyond the prescribed limits, are urged to buy their tickets on this convention certificate plan. Those who perhaps have only a short distance to go. and who may think it unnecessary, in view of the small expense to take their tickets on this plan, will be asked at the meeting to give the return coupons of their tickets to the secretary, for submission to the special agent, in order that they may help to bring up the total of the convention certificates to the required three hundred.

THE INTERNATIONAL MEDICAL CONGRESS IN LONDON

THE last meeting of the Congress in London took place in 1881, under the presidency of Sir James Paget. This year the president is Sir Thomas Barlow. The central office will be in the Albert Hall. The sectional meetings will be held in rooms in the University of London, the Imperial Col-

lege, the Royal School of Science, the School of Art, and the Central Technical College; the Royal College of Physicians, the Royal Society of Medicine, St. Thomas' Hospital, the Royal Army Medical College at Millbank, and the Royal Dental College are also offering accommodation. The Student's Union of the Imperial College will serve as the men's club, and the authorities of Alexandra House have kindly lent rooms for a ladies' club. Five general addresses have been arranged; these will be delivered in the Albert Hall by Professor Chauffard (Medicine), Professor Harvey Cushing (Surgery), Professor Ehrlich (Pathology), Mr. W. Bateson (Heredity), and the Rt. Hon. John Burns, M.P. (Public Health). It is estimated that about 5,000 medical men and 2,000 ladies will attend the Congress.

The reports drawn up by those chosen to introduce the discussions are being received and set up in type. It is hoped that it will be possible to bind these reports, as a separate volume for each section, before the Congress opens. A second volume for each section will be published subsequently and will contain the speeches delivered and the independent papers presented at the Congress.

The section of Museum Technique has been organized by the International Association of Medical Museums with the collaboration of the Museum Committee of the Congress and will include the following subsections: preparation and preservation of material; methods of housing and display and museum administration. Thus it is intended that an opportunity shall be given to demonstrate the different methods employed by workers and to call attention to the usefulness and possible scope of the medical museum. Descriptive cards written in English, French, and German, will be attached to each exhibit. The specimens should be addressed to Dr. H. W. Armit, Hon. Secretary, Pathological Museum, Imperial College of Science, South Kensington, London; or, they may be sent to the local secretaries of the International Association of Medical Museums, by whom they will be for-

warded to the Museum of the Congress. All exhibits should reach the Imperial College of Science between July 25th and August 2nd. It is understood that the exhibitor will agree to pay his share of the expense of forwarding the specimens which are to be exhibited, which shall include nothing of a commercial nature. In the event of an exhibitor making a communication to a section, arrangements may be made with the committee for his specimens to be made available at the sectional meetings.

Subscriptions to the general fund of the Congress should be forwarded to the Treasurers. It should be borne in mind that the membership subscription of £1 only suffices to meet the expenses of producing the volume of Transactions subsequently delivered to each member. The entire cost of organization and conduct of the meeting therefore, has to be provided for by private subscriptions to the general fund. The office of the Secretary of the Canadian Committee is at 134 Bloor Street West, Toronto.

CANADIAN PUBLIC HEALTH ASSOCIATION

THE Third Annual Congress of the Canadian Public Health Association will be held in Regina, on September 18th, 19th and 20th, 1913. This will be the first occasion on which the members of the Association have met in the West.

At the Congress held in Toronto last year, communications were read from the city of Regina and the government of Saskatchewan, inviting the members to make Regina their next meeting place. These invitations were unanimously accepted and a hearty welcome will be extended to the Association by Saskatchewan's provincial government and its capital city.

The provincial government, realizing the educational value of such a conference, and the stimulation of interest which it will effect in matters of public health, have decided to bring all the medical health officers of the province, some

two hundred in number, to the congress. There is, therefore, every indication that the attendance will equal, if not surpass, that of the two previous meetings in Montreal and Toronto.

Following the decision to hold the Convention in Regina, the Executive Committee of the Association at Ottawa elected Dr. M. M. Seymour, Commissioner of Public Health for Saskatchewan, Convenor of the Local Arrangements Committee. Local committees have already been formed, and are actively engaged in preparing a programme of outstanding strength and interest. Several of the most prominent health authorities of the Dominion and the United States will address the Convention.

The Secretary of the Local Arrangements Committee is Mr. R. H. Murray, Engineer to the Bureau of Public Health, Regina.

A COLLEGE of Surgeons of North America was organized at a meeting in Washington on May 5th, when four hundred and fifty prominent surgeons from all parts of the continent came together for this purpose, at the invitation of a committee which was appointed by the Clinical Congress of Surgeons of North America at its last meeting. The object of the College is to elevate the standard of surgery, to provide a method of granting fellowships in the organization, and to formulate a plan which will indicate to the public and the profession that the surgeon possessing such a fellowship is especially qualified to practice surgery as a specialty; also to formulate a minimum standard of requirements which should be possessed by any authorized graduate in medicine, who is allowed to perform independently surgical operations; and, further, to seek the means of legalizing this standard. Members are to be known as Fellows of the College, and the Fellowship is to be open to any applicant who is a legally qualified practitioner and who meets the requirements, professional and ethical, of the College. The initial fee will be twenty-five dollars, and the annual dues, five dollars.

Of the fifty surgeons who are to be elected annually to serve three years on the Board of Governors, thirty are to be nominated by accredited societies. The surgical section of the Canadian Medical Association, for example, is to nominate two members. The governors in turn are to elect a board of twelve Regents, not more than nine of whom can be of the same country. Officers were elected as follows: president, J. M. T. Finnie, Maryland; first vice-president, W. W. Chipman, Quebec; second vice-president, Rudolph Matas, Louisiana; treasurer, A. J. Ochsner, Illinois; general secretary, Franklin H. Martin, Illinois. In addition to the above, Drs. H. A. Bruce, Ontario; G. E. Armstrong, Quebec, and R. E. McKechnie, British Columbia, were elected to the Board of Regents.

THE Dominion Medical Council will hold its adjourned meeting in Ottawa on June 17th. All regulations having first been approved by the Governor-in-Council, arrangements will be made for the holding of examinations early in the autumn, probably during the first or second week in October. The subjects of examination, both written and oral, we are informed, will be anatomy and physiology only of the primary and all the final branches. It is expected also that the clause in the Act providing for those who have been ten years in practice in one or more of the provinces of Canada will be at once brought into effect. All necessary information regarding arrangements completed by the Council may be obtained after the meeting from the Registrar, Dr. R. W. Powell, 180 Cooper Street, Ottawa.

From June 24th to 27th, a meeting of alienists and neurologists of the United States will be held at Chicago. The secretary is Dr. W. T. Mefford, 2150, West Madison Street, Chicago.

THE annual meeting of the American Medical Association will be held at Minneapolis from June 17th to 20th, 1913.

IN England, a new measure, on lines similar to the Mental Deficiency Bill which was withdrawn last year, has been introduced into the House of Commons. It is hoped that the Bill may be passed during the present session. The proposed Act, which is more limited in scope than last year's bill, will be administered by the Lunacy Commissioners, to be known in future as the Board of Control. The medical members of the Board will be appointed by the Home Secretary, while the legal representatives will be nominated by the Lord Chancellor. The Bill states the several categories of mental defectives that may be dealt with under the Act.

AN institute for medical research which is to be called the South African Institute for Medical Research has been established at Johannesburg. It is probable that research scholarships will be available for suitably qualified medical men. The institute is quite near the general hospital, which is the largest in South Africa, and it will contain four wards with from twenty to thirty beds for the treatment of patients. The director of the Institute is Dr. Watkins Pitchford, formerly house physician to St. Thomas' Hospital, London. The building will be completed in about a year's time.

THE thirty-second annual report of the Falconwood Hospital for the Insane, at Charlottetown, Prince Edward Island, gives an interesting account of the year's work. From October 1st, 1911, to December 31st, 1912, 76 patients were admitted to the hospital. The number under treatment during the year was 327—182 men and 145 women. Twenty deaths occurred, 31 patients were discharged "recovered," 9 "improved," and 6 "unimproved." Thus the percentage of recoveries was 40·76 and the death rate 6·1 per cent. At

the end of the year 261 patients were in the hospital. Since 1848, 1999 persons have been treated in the hospital—1146 men and 853 women; of this number, 820 have recovered—499 men and 321 women; and 281—163 men and 118 women—have improved; while 504 have died, and 133 are reported as "not improved."

The statistics for the Provincial Infirmary are: patients in residence October 1st, 1911, 78; admissions during the year, 44; in residence December 31st, 1912, 100—50 men and 50 women. The infirmary was opened in February, 1909, and since then 176 persons have been admitted.

During the past year, a cottage hospital for the treatment of tuberculous patients has been completed. The building will accommodate about twenty patients and it measures 42 x 40 feet. The work of construction, with exception of the plumbing, was performed by the patients.

It can truly be said that the welfare of the race and the happiness of the individual are the vital issues with which humanity is concerned. The second depends in great part upon the individual himself; but the first gives food for thought to all those who are interested in the common good. And, in this, one's efforts must largely be directed to the future. Among the many social problems now awaiting solution is that of the feeble-minded—and it is a question fraught with many difficulties. How is it possible to ensure protection, and guidance, and justice, to those who are incapable of right judgement, and whose minds are those of a little child even though their bodies are fully developed? In the seventh report on the feeble-minded in Ontario, Dr. Helen MacMurchy gives a clear account of existing conditions. In Ontario alone there are over 6,000 feeble-minded persons, in the state of Michigan there are 9,000, and in New York City there are 15,000 feeble-minded children! The Orillia Hospital is overcrowded and has a waiting list on which appear 311 names.

One obvious thing to do is to take care of the mentally defective child. Dr. MacMurchy suggests that all children should be kept at school from the ages of seven to fourteen years; that a census should be prepared of all children and that special training should be given to those who are unable mentally to keep pace with a normal child of the same age. If after receiving the special training, it is clearly apparent that the child is mentally defective, it should be given a suitable, practical—manual and industrial—education, and, what perhaps is more important, should be carefully guarded from evil influences. Should the parents be unable to do this, it should be done by the municipality. As for the adult, the colony type of institution is the most economical and most satisfactory way of caring for the feeble-minded. Cottages would be built large enough to hold from forty to sixty inmates; workshops, schools, and a church would be built; and thus these poor unfortunates would form a thrifty community, and much evil resulting from neglect would be avoided. Surely, it is scarcely right that irresponsible persons should be allowed to wander free and, as is so often the case, drift into houses of refuge or even the common jail, where so many of them go to expiate crimes the enormity of which they are perfectly incompetent to realize!

An informal business meeting of the International Association of Medical Museums was held on May 5th, at the Army Medical School, Washington, under the presidency of Professor A. S. Warthin, of Ann Harbor, Mich. On this occasion, the secretary, Dr. Maude E. Abbott, was requested to communicate with the English, French, German, Italian, Russian, Scandinavian, Swiss, Japanese, and Australasian members, suggesting the formation of sectional societies, or committees, under the control of the main international body; suggesting also that a representative of each nationality be sent to the meeting which is to be held in London in conjunction with the Seventeenth International Congress of Medicine,

there to discuss, formulate, and establish the mechanism of the government of the International Association of Medical Museums and of its sectional societies. The more perfect organization of the association will be considered at the London meeting, and suggestions were made bearing on this matter. A committee of three was appointed to act for the American branch of the Association at the London meeting. Furthermore it was decided to establish at McGill University, Montreal, a central bureau for North America for the preservation of results of original research. The curator will be Dr. Abbott, under whose direction the material will be preserved, catalogued, indexed, and made available for reference.

THE annual meeting of the American Medical Editor's Association will be held on June 16th, at the Hotel Radisson, Minneapolis, Minn. An interesting programme has been arranged and the meeting will be followed, on the evening of the same day, by the annual banquet.

THE president of the Canadian Committee of the Fourth International Congress on School Hygiene, which will take place at Buffalo, N.Y., from August 25th to 30th, is Sir James Grant, of Ottawa. The secretary is Dr. Chas. A. Hodgetts, medical adviser to the Commission of Conservation, Ottawa.

ACCORDING to the regulations recently made for the protection of immigrants seeking employment, every person, firm, or company, engaged in the business of an intelligence office, or employment or labour agency, and having business dealings with immigrants, shall first obtain a license from the Superintendent of Immigration. Such license shall not be transferable, and should the holder fail to comply with the requirements of the Immigration Act, it shall be revocable on the written order of the Superintendent of Immigration. Certain rules are laid down for the conduct of the holder of

such license, and should these rules be broken, the holder renders himself liable to a penalty not exceeding $100, or a term of imprisonment not exceeding three months.

A society of Jewish doctors and scientists has been formed in Palestine. The intention of the society is to improve the sanitary conditions, and for this purpose it is proposed to establish a bacteriological laboratory, central clinics for the education of those who have charge of infants, and departments for the study of malaria and the suppression of trachoma.

It was stated in the March issue of the *Journal* that the name of the *Public Health Journal* had been changed. We were misinformed on this point, as no change has been made in the name of the journal in question. An explanation of the matter will be found on page xxiii of the April issue of the *Public Health Journal.*

The *Public Service Monthly*, Volume I, No. 9, contains an article, written by Dr. Arthur Wilson, of Regina, concerning the hospitals in the province of Saskatchewan. The article is clear and concise and it presents much useful information of statistical value. There are twenty-one hospitals in the province, with a total bed capacity of 922; this gives about two beds to every 1,000 persons, the population of the province being approximately half a million. It is the intention to build many new hospitals, in fact several are in course of construction, and within the next year or so it is expected that at least twenty new hospitals will be built at different places in the province. The need for hospital extension is very great, particularly in the maternity wards and isolation hospitals. Last year the death rate in hospital was five per cent. Seven hundred and thirty-two cases of typhoid were treated, and of these eighty-nine died. One hundred and sixty-three cases of tuberculosis were treated and of these thirty-eight died.

The average daily cost of maintenance per patient is about $2.05; in Ontario it is only $1.21, but the higher cost of living in the West necessitates a higher expenditure. The per capita government grant is fifty cents a day; in Ontario it is about twenty cents. The total cost of maintenance of the hospitals during the year was over $432,359.24, and to this amount the provincial government contributed $85,100.50.

THE eighth annual report of the provincial sanatorium at Kentville, N.S., gives the following account of the work accomplished during the year ending September 30th, 1912. Fifty-seven patients were treated and forty of these were discharged—eleven apparently cured, twenty arrested, three improved, three unimproved, and three found to be non-tuberculous. On admission, these cases were classed as follows: eleven incipient, twenty-six moderately advanced, and three non-tuberculous. Thirty-five remained for the full term of treatment, their average stay being one hundred and eighty-one days. Particular emphasis is laid on the importance of the educational work done in the sanatoriums as a means of prevention of the disease, and on the benefits derived by the patients from the change of environment. During the year tuberculin was not used to any great extent, but in cases where it was used the results were satisfactory; these will be given more fully in the next report.

THE supplement to the *British Medical Journal*, February 22nd, 1913, contains the report of the committee appointed by the King Edward Hospital Fund for London, to enquire into the system prevailing in the London hospitals with regard to the admission of out-patients. After considering at some length the classes of patients for whom the out-patient department is intended and the misuse of such departments, the report enumerates the objects to be aimed at in reform; they are, (1) the reduction of numbers by the

exclusion of those able to pay for treatment and of those who should be referred to the Poor Law, and by the discouragement of trivial cases; (2) the development of the consultative side of hospital work, and coöperation with general practitioners; (3) the coördination of hospital assistance with general charitable work; (4) the provision of adequate safeguards for the interests of medical education and the development of medical science. The objects of the out-patient department are defined as: (1) to provide effective medical attendance for persons unable to pay; (2) to provide immediate treatment for sudden and serious accident or illness; (3) to provide special diagnosis, advice, or treatment where necessary; (4) to assist medical education and the advancement of medical science.

At the annual general meeting of the Association Internationale de Perfectionnement Scientifique et Médicale, which was held in Paris at the end of May, the medal for social service was presented to Her Majesty the Queen of the Belgians, the medal for scientific merit to Professor Armand Gautier, and the association medal to Professor Ehlers of Copenhagen.

In China the old order has changed and a new civilization has dawned. And with these changes have come opportunities of development, and the great Celestial Empire has become a field waiting for the seed which shall yield a fruitful harvest. Here western medicine already has found a fertile soil. Medical training centres are being established by the China Medical Missionary Association at Moukden, Peking, Chinanfu, Nanking-Hanchow, Hankow, Chengtu, Canton, and Foo-chow. A curriculum, somewhat on the British plan, has been arranged, and each school will have a staff of at least ten qualified European or Chinese teachers, for the most part drawn from the different missionary societies. The

teaching will be given in Chinese and in either German or English, the choice to be made by the Chinese authorities. Should the German language be chosen, it is hoped that English will be permitted as an alternative.

As a memorial to the late Lord Lister, and as a means of perpetuating his memory in a way that it is hoped will prove interesting and instructive to every member of the medical profession for all time to come, one of the wards in the Royal Infirmary, Glasgow, in which he worked out and first put into practice the principles of antiseptic surgery, is to be reserved and utilized. One part of the ward is to be refurnished, as it was in his time, with such objects as it may be possible to acquire; while the other part is to be made into a museum for the exhibition of anything associated with the life and work of the great master. It is, therefore, asked that any who may have letters, pamphlets, books, or other objects of direct personal association with Lister and his work will either present or loan them to the museum. Professor John H. Teacher, honorary curator of the museum, will be pleased to receive any objects addressed to him at the Royal Infirmary, Glasgow. The names of all donors or senders of objects are to be affixed to the exhibits.

THE average citizen delights in criticizing all civic institutions and the Ottawa Isolation Hospital has been attracting such attention lately. It has been charged, in addition to minor faults, that there is too much communication between the different wards and with outside sources of infection, that pupil nurses are left in charge of the wards during the night, without the oversight of experienced nurses. What appears to have given rise to the charges has been the occurrence of a suspicious case of smallpox among the patients.

An investigation was held by a committee of the Board of Health, who reported that the charges were greatly over-

drawn, but recommended that a permanent medical superintendent should be appointed to have full control. At present the house surgeon rarely remains longer than one year, and the lady superintendent is really the responsible party, as she is in more permanent office. This report has not been acted on by the Board of Control, as it wishes to place it in the hands of the new health officer when he takes up his duties.

The hospital is modern and excellent in every respect, and should have the confidence of every one.

THE Permanent Committee of the International Congresses of Medicine gives notice that three prizes will be awarded during the International Medical Congress in London next August. The Moscow prize of 5,000 francs, instituted in commemoration of the twelfth congress, which was held in that city, is given for the best work done in medicine or hygiene or for distinguished services in the cause of suffering humanity. The Paris prize of 4,000 francs, founded at the thirteenth congress, will be awarded to the person judged to have made within the last ten years the most important original contributions to the advancement of medicine, surgery, obstetrics, or to anatomy or biology in their applications to medical science. The Hungary prize, which was established by the sixteenth congress at Budapest in 1909, is awarded for some work in medical science which has been published in the interval between one congress and the next. This prize is of the value of 3,000 crowns. The Permanent Committee is prepared to receive suggestions to guide it in the award of these prizes. Communications should be addressed to the committee at 10, Hugo de Grootstraat, The Hague, Holland.

A GOOD deal of progress has been made since the seventeenth century, and in these days of comparative enlighten-

ment it would not seem impossible to diagnose a case of typhoid. Yet a man was allowed to die of this disease in the Montreal jail, after four days' severe illness, without any medical attendance. The man—a Swede—was found wandering about the streets, and as his actions appeared rather strange, he was taken in charge by the police. He stated that he was hungry and had had no food for two days. Brought before the magistrate, his manner appeared strange and he was suspected of insanity. Accordingly, he was sent to the jail for eight days to be examined as to his mental condition. No importance was attached to his physical state, and as the jail doctor was out of town, the man was allowed to lie in his cell, delirious and unattended, until he died. Unfortunately, this instance is by no means unique. Two days later, another death occurred in the jail under the same conditions. This man was suffering from mental disease. Although obviously ill, no medical assistance was procured for him and he died also. For want of a better place, insane persons are now sent to the common jail to await their trial. The need for reform has been recognized in Ontario, and bills dealing with the matter are now under consideration by the provincial parliament. Until Quebec sees fit to amend its laws in this connexion, one might expect that medical assistance would be provided when necessary, and that it would be possible to discriminate between those really ill and those seeking to mislead the men in charge.

PROVISIONAL PROGRAMME

Forty-Sixth Annual Meeting—London, Ontario, June 24th, 25th, 26th, 27th, 1913

GENERAL PROGRAMME

First Day—Tuesday, June 24th

9.00 a.m. Registration, etc.
Meeting of Executive Council.
10.00 a.m. Meeting of Sections.
2.00 p.m. Meeting of Sections.
8.30 p.m. General Meeting.
Invocation.
Address of welcome, His Worship the Mayor of London.
Election of members to the Executive Council
Address in surgery, Dr. J. Alex. Hutchison, Montreal.
Address in gynæcology, Dr. T. S. Cullen, Baltimore.

Second Day—Wednesday, June 25th

9.00 a.m. Meeting of Sections.
12.30 p.m. Luncheon at Victoria Hospital.
2.00 p.m. Meeting of Sections.
8.30 p.m. General meeting.
President's address, Dr. H. A. McCallum, London.
Address in medicine, Dr. Lewellys F. Barker, Baltimore.

Third Day—Thursday, June 26th

9.00 a.m. Meeting of Combined Sections.
Symposium on diseases of the stomach, medical and surgical, introduced by Dr. Alexander McPhedran, Toronto.
Meeting of the Canadian Medical Protective Association.
2.00 p.m. Meeting of Combined Sections.
Symposium on diseases of the thyroid, medical and surgical aspects; introduced by Dr. A. J. Ochsner, Chicago.

4.00 p.m. General meeting for general business.
Meeting of Executive of Ontario Medical Association.
8.30 p.m. Members of the profession resident in London will entertain the members of the association at a smoking concert in the New Masonic Hall.

FOURTH DAY—FRIDAY, JUNE 27TH

9.30 a.m. Dr. Frank Billings, Chicago, will conduct a medical clinic before the Association.
Dr. L. G. Rowntree, Baltimore: "Experimental and clinical study of the functional activity of the liver, by means of phenol-tetra-chlorophthalein."
2.00 p.m. Dr. John B. Murphy, Chicago, will give a lantern lecture on the surgery of the bones and joints.

Section of Laboratory Workers

Tuesday, June 24th, 2.00 p.m.:

Dr. C. G. Imrie, Toronto: "Some facts with regard to fatty degeneration of the heart."

Dr. Fletcher McPhedran, Toronto: "Hæmolytic action of the extracts from organs in pernicious anæmia."

Dr. D. C. Revell, Edmonton: "Examining colonies in plates."

Dr. F. B. Bowman, Hamilton: Title later.

Dr. Fraser B. Gurd, Montreal: "The toxins of intestinal obstruction."

Dr. E. A. Archibald, Montreal: "Ascending infection of the common bile duct."

Dr. George Shanks, Montreal: "A study of a case of splenomegaly."

Dr. F. T. Tooke, Montreal: "The pathological complications of cataract extraction."

Drs. Grant Campbell and W. G. Hepburn, Montreal: "A case of cardiac anomaly."

Dr. O. C. Grüner, Montreal: "The spleen in the light of recent histology."

Dr. E. J. Mullally, Montreal: A demonstration—title later.

Wednesday, June 25th, 2.00 p.m.:

Dr. D. Fraser Harris, Halifax: "On the reducing endo-enzyme of internal respiration."

Drs. F. R. Millar and H. A. Sims, Montreal: "Methods employed in stimulating the cerebral cortex."

Dr. A. H. McCordick, Montreal: "The proteid, fat, and carbohydrate contents of certain organs."

Dr. V. E. Henderson, Toronto: Title later.

Dr. H. J. Robertson, Toronto: "An experimental criticism of the methods of uric acid analysis from the clinical standpoint."

Dr. F. W. Rolph, Toronto: "The indicator method of estimating gastric acidity."

Dr. A. H. Caulfeild, Toronto: "The correlation of biological findings and clinical progress in tuberculosis."

Drs. C. K. Russel and J. Kaufmann, Montreal: "Examination of the cerebrospinal fluid in tabes and the results of treatment."

Dr. R. G. Armour, Toronto: "Syphilis as encountered by the neurologist."

Section of Public Health

Tuesday morning:

Dr. J. W. S. McCullough, Toronto: "Public health legislation in Ontario."

Dr. J. A. Hutchinson, Westmount: "Public health legislation in the province of Quebec."

Discussion by Drs. M. M. Seymour, Regina; D. G. Revell, Edmonton, and C. J. Fagan, Victoria.

Dr. G. G. Nasmith: "The control of a municipal milk supply."

Discussion: Drs. T. H. Whitelaw, Edmonton, and E. L. Williams, London.

Dr. A. E. Wodehouse: "The great need of the physician's active coöperation in public health work."

Wednesday morning:

Dr. John Stewart, Halifax: "Report of special committee on medical inspection of schools."

Symposium on "Venereal disease as a practical public health problem."

Papers by Drs. H. W. Hill, London, F. A. Clarkson, Toronto; and A. S. Warthin, Michigan; discussed by Professor Watson, Toronto.

Dr. L. F. Barker, Baltimore: "Mental Hygiene."

Discussion: Dr. E. H. Young, Kingston.

Section of Obstetrics and Gynæcology

Tuesday, June 24th:

2.00 p.m. Dr. F. Fenton, Toronto: Title later.
Dr. H. M. Little, Montreal: Title later.
Dr. Adam Wright, Toronto: "Anæsthesia and the forceps in labour."
Dr. Hendrick, Toronto: "Repair of the lacerated perinæum."

Wednesday, June 25th:

9.00 a.m. Symposium on eclampsia, introduced by Dr. D. J. Evans, Montreal.
2.00 p.m. Dr. J. A. Vineberg, New York: "Puerperal sepsis.
Dr. W. Cuthbertson, Chicago: "Improved operation for displacements of the uterus."
Professor Watson, Toronto: Title later.

Section of Surgery

Tuesday, June 24th:

10.00 a.m. Drs. Alex. Primrose and T. D. Archibald, Toronto: "Aneurysm of the posterior tibial artery."
Dr. J. P. Kennedy, Wingham: "Membranous pericolitis."
Dr. W. Gunn, Clinton: Title later.
Dr. R. Y. Parry, Hamilton: Title later.
Dr. G. T. McKeough, Chatham: Title later.
2.00 p.m. Dr. H. A. Bruce Toronto: Title later.
Dr. R. E. McKechnie, Vancouver: "Congenital hypertrophic pyloric stenosis."
Dr. I. Olmsted, Hamilton: Title later.
Dr. J. Halpenny, Winnipeg: Title later.
Dr. J. E. Hett, Berlin: "Treatment of cancer by fulguration."
Dr. A. E. Garrow, Montreal: Title later.

Wednesday, June 25th:

9.00 a.m. Dr. W. E. Gallie and D. E. Robertson, Toronto: "Experimental study of regeneration of bone."
Dr. E. S. Ryerson, Toronto: "Clinical aspects of regeneration of bone as manifested by a study of the union of fractures."
Dr. J. E. Lehman, Winnipeg: A paper dealing with fractures.
Dr. Emil Beck, Chicago: "Results of eight years' treatment of sinuses and abscesses with bismuth paste."
Dr. C. E. Starr, Toronto: Title later.
2.00 p.m. H. R. Casgrain, Windsor: Title later.

Dr. Angus McLean, Detroit: "Suprapubic prostatectomy."

Dr. F. N. G. Starr, Toronto: "Etiology, symptoms, and treatment of gall-stones."

Dr. E. W. Archibald, Montreal: "Surgical problems in cases of meningitis."

Dr. H. P. H. Galloway, Winnipeg: Title later.

Drs. F. A. C. Scrimger, E. W. Archibald, and H. Pirie, Montreal: "Gastro-enterostomy; experimental and clinical."

Section of Medicine

First Day, Tuesday, June 24th:

10.00 a.m. Dr. Newell, Watford: Title later.

Drs. G. W. Ross and C. S. Wright: "Infectious arthritis, etiology, pathology and treatment."

Dr. H. B. Anderson: "Clinical importance of some pathological interrelationships in diseases of the abdomen.

Dr. J. H. Elliott: "Diagnosis of tuberculous, bronchial and mediastinal glands."

Dr. R. C. Paterson, Ste. Agathe: "Pain as a symptom in pulmonary tuberculosis."

2.00 p.m. Dr. H. McGougan: "Acute bronchitis and pneumonia of infancy and childhood."

Dr. G. S. Strathy: "Treatment of congenital syphilis with salvarsan."

Drs. Strathy, Bates and McVicar: "Treatment of general paresis and tabes with salvarsan."

Dr. G. W. Howland: "Functional disturbances of the nervous system, hysteria and neurasthenia; antiquated diagnoses."

Dr. N. H. Alcock, Montreal: "Some new points in dietetics."

Second Day, Wednesday, June 25th:

9.00 a.m. Dr. Glasco: "Psycho-therapy."

Dr. V. E. Henderson: "Action of some important foodstuffs, illustrated with lantern slides."

Dr. H. C. Parsons: "Infection of children in tuberculosis."

Dr. C. S. McVicar: "Some psychiatric problems as they affect the general practitioner."

Dr. E. Ryan: "Early symptoms and treatment of psychoses."

2.00 p.m. Dr. A. Keibel: "The value and limitation of the Wassermann reaction."

Dr. F. W. Rolph: "Gastric hyperacidity."

Dr. A. McPhedran: "Pituitary extract as a cardiac stimulant in pneumonia."

Dr. J. H. McPhedran: "Endocarditis in influenza."

Dr. Slader: "Erythema multiforme and anaphylaxis."

Dr. Goldie: "Occurrence of fluid exudate in the pleural sac in croupous pneumonia."

Dr. Shannon: "Hereditary chorea."

Dr. A. H. Caulfeild: "Vago-tonics."

Meeting of Combined Sections

Third Day, Thursday, June 26th:

9.00 a.m. "Symposium on diseases of the stomach," introduced by Dr. Alexander McPhedran. Drs. Martin, Montreal; Aaron, Detroit; Stockton, Buffalo; and others, will discuss the medical side. Drs. Paterson, London, England; Ochsner, Chicago; C. E. Starr, Toronto; Angus McLean, Detroit; Archibald, Montreal; McKechnie, Vancouver, and others, will speak on the surgical side.

2.00 p.m. "Symposium on diseases of the thyroid," introduced by Dr. A. J. Ochsner, Chicago. Drs. Hoover, Cleveland; Lafleur, Montreal; Barker, Baltimore; H. B. Anderson, Toronto, and others, will deal with the medical side. Drs. Halpenny, Winnipeg; Bruce, Toronto; Olmsted, Hamilton; Bingham, Toronto, and others, will speak on the surgical side.

Section of Ophthalmology and Oto-Laryngology

The following have promised papers in this section: Dr. A. T. Woodruff, Chicago; Dr. Price Brown, Toronto; Dr. Perry Goldsmith, Toronto; Dr. J. Hunt, Fort William.

Section of X-Ray Workers

Dr. Pirie, Montreal: Title later.

Dr. Wilkins, Montreal: "Bismuth diagnosis in gastric ulcer."

Dr. P. M. Hickie, Detroit: "Radiographic findings in late syphilitic bone disease."

Dr. Emil Beck, Chicago: "Eight years' experience in the treatment of abscesses and sinuses with bismuth paste."

Latern demonstration of *x*-ray work in which several will take part.

There will also be an exhibit of *x*-ray work.

Book Reviews

SURGERY, ITS PRINCIPLES AND PRACTICE. By Various Authors, edited by WILLIAM JAMES KEEN, M.D., LL.D. Volume VI. Illustrated. Price per volume, cloth, $7.00 net; half morocco, $8.00 net. Philadelphia and London: W. B. Saunders Company. Canadian agents: The J. F. Hartz Company, Toronto, 1913.

The sixth volume of "Keen's Surgery" which has been eagerly awaited, reached us on March 22nd. The five volumes originally contemplated in this system of surgery were published between the years 1906 and 1909. Although the time that has elapsed since the publication of the first volume, seven years ago, is not very long, yet, as Dr. Keen says in the preface, the progress of surgery has been so rapid that some of the earlier matter is obsolete, and there is much new material which should be placed before the profession. Accordingly, the authors were asked to supplement their previous chapters, and some new sections have been introduced into this volume. The most important of these include a fuller description of the apparatus for operating on the thorax, the method of anæsthesia by intratrachæl insufflation, by nitrous oxide, and by the intravenous introduction of ether. Amongst other subjects newly treated are: the surgery of the hypophysis; the treatment of cancer by fulguration and desiccation; the use of iodin as a disinfectant of wounds; and the use of salvarsan in syphilis. One notices several new names in this volume, and the omission of others on account of death. Dr. Keen mentions with sympathetic appreciation, Professor John C. Munroe, Professor Zachrisson, Surgeon-General O'Reilly, Professor Cabot, and Professor Horwitz. To this volume there are sixty-one contributors, and the names include those of well-known surgeons in the United States, Canada, England, and Germany. It contains one hundred and fifty-seven chapters with an index to the volume, and a general index to the whole system. The indexes alone cover one hundred and fifty-six pages. The opening chapter is by Professor Adami, of Montreal, in which he considers the advances which have been made in the study of inflammation during the past eight years. His contribution is really an amplification of his article

which appeared in the first volume in 1906. He lays especial stress upon treatment, and has considered quite fully the various newer methods. He quotes Shäffer as authority "that wet bandages separated from the surface by a water-tight membrane and left unchanged as long as possible" form the most satisfactory and simplest means of aiding the inflammatory process and bringing it to a favourable termination. Dr. George E. Armstrong, of Montreal, contributes the chapter on "Surgery of the Infectious Diseases." It is rich in statistics, and the author shows conclusively that "each year there is a lowering of the mortality from perforation [in typhoid] due to greater alertness on the part of physicians, earlier diagnosis, and improved technique." He quotes his experience in the Montreal General Hospital, where twenty-two perforations occurred, nineteen of which were operated upon, and nine recovered. We hasten to call attention at the earliest possible moment to this important work which is now brought to a completion; but it should be added that this volume is quite complete in itself, and is of value not only as a part of a general system, but also as an independent work upon the various subjects with which it deals, and these, in the main, include the whole of surgery. Any notices of this volume would be quite imperfect without a reference to the chapter on Thoracic Surgery, as this is the division in which progress has been most marked in recent years.

MINOR MALADIES AND THEIR TREATMENT. By LEONARD WILLIAMS, M.D., M.R.C.P. Third edition; price, 5s. net. London: Baillière, Tindall & Cox, 1913.

For fifteen years Dr. Leonard Williams's little book has proved itself to be a useful compendium of knowledge for the practitioner, young and old. It deals with the subject which forms more than nine-tenths of the average physician's daily work, namely the treatment of minor maladies. It is not merely a collection of prescriptions: it is a well-reasoned treatise, and will be found useful on every working day.

CONSUMPTION. ITS CAUSE, PREVENTION AND CURE. Issued by the Anti-Tuberculosis Leagues of the Island of Cape Breton, Nova Scotia. Literary editor, GEORGE H. COX, M.D. Business editor, JOHN W. MACLEOD. London: Eyre & Spottiswoode, Ltd., 1912.

Forty thousand copies of this book have been distributed. It contains one hundred and twenty-eight pages and the cost in

large quantities is incredibly small. The contents deal not alone with tuberculosis: they are, in addition, a summary of personal hygiene and public sanitation for common use. The work was undertaken by the University of St. Francis Xavier College in coöperation with the medical profession of the district. The good which is being accomplished by their self-sacrificing labours is incalculable.

DISEASES OF THE EAR. By RICHARD LAKE, F.R.C.S. Surgeon, Diseases of Ear, London School of Clinical Medicine. 287 pages, 4 coloured plates and 77 original illustrations. Fourth edition, revised and enlarged; price, $2.50. Toronto: D. T. McAinsh & Co.

This book is precisely what it is described to be, namely, a hand-book, and not a treatise. It does its business well, and has done so for the past ten years. In that time the book has passed through four editions. A student can desire nothing better: the practitioner of medicine will find it ample for his needs.

THE OPERATING ROOM AND THE PATIENT. By RUSSELL S. FOWLER, M.D., Chief Surgeon First Division, German Hospital, Brooklyn. Third edition rewritten and enlarged. Octavo volume of 611 pages with 212 illustrations. Cloth, $3.50 net. Philadelphia and London: W. B. Saunders Company, 1913. Canadian agents: The J. F. Hartz Co., Ltd., Toronto.

It is hard to assign this book to its proper category. It co n tains something of the principles and something of the practice of surgery. It is a guide for operating. It partakes somewhat of the nature of a book on minor surgery and is especially strong in bandaging, dressing, and other forms of technique. There is something in it for everybody and not too much of any one thing. The illustrations or rather pictures are very realistic. A very complete list of instruments and dressings is appended.

OPHTHALMOLOGY FOR VETERINARIANS. By Walter N. Sharp, M.D., Professor of Ophthalmology in the Indiana Veterinary College. 12mo of 210 pages, illustrated. Cloth, $2.00 net. Philadelphia and London: W. B. Saunders Company, 1913. Canadian agents: The J. F. Hartz Co., Ltd., Toronto.

The first impression one receives of this book is that it is something entirely new, as the present reviewer does not remember

having seen a work devoted exclusively to the eyes of animals. A more careful reading discloses the fellowship between man and his more humble congeners in respect at least of the visual apparatus. The anatomy is practically the same in man and in the higher animals, and both are subject to the same accidents and to diseases which are very similar. Yet veterinary surgeons will find in the book everything which pertains to their special work set forth in a form which is easy of comprehension.

THE MODERN HOSPITAL; ITS INSPIRATION; ITS ARCHITECTURE; ITS EQUIPMENT; ITS OPERATION. BY JOHN A. HORNSBY, M.D., Secretary Hospital Section, American Medical Association; and RICHARD E. SCHMIDT, Architect, Fellow American Institute of Architects. Octavo volume of 644 pages with 207 illustrations. Cloth, $7.00. Philadelphia and London: W. B. Saunders Company, 1913. Canadian agents: The J. F. Hartz Co., Ltd., Toronto.

The modern hospital is an institution in itself. It has developed its own architecture to meet the special work which is carried on within the building. Its type is as distinct as those of a cathedral, a museum, or an art gallery; and beauty and design is not incompatible with its function. At this moment there are few cities, in America at least, in which new hospitals are not going up or additions to old ones being made. Besides, the internal economy of a hospital has been somewhat reduced to a standard which must be learned by an architect who is willing to be guided by experience rather than by preconceived notions. In all these reasons the present work is most timely. It is a noble volume of 644 pages in octavo, beautifully printed and splendidly illustrated. The authors do themselves something less than justice in the preface. They err by deprecation and understatement. They employ the terms "shortcomings," "unfinished character," "tremendous weakness." They defend themselves from the hypothetical charge that the mention of firms and individuals and the articles they manufacture "was done by way of advertising and perhaps for a price." On the contrary, this information is an important element in adding to the value of the work, and the authors give the impression of entire sincerity. We should consider that medical boards and architects who are responsible for the erection, equipment, and maintenance of hospitals were remiss in their duty if they did not acquaint themselves with this body of knowledge which has been

put at their disposal. The book is not for these alone: it is for every physician who has occasion to enter within the doors of a hospital.

EPIDEMIC CEREBROSPINAL MENINGITIS. BY ABRAHAM SOPHIAN, M.D. Illustrated; price, $3.00. St. Louis: C. V. Mosby Company, 1913.

The author has ample warrant for writing this book. He was trained in the New York Research Laboratory, and was in charge of the arrangements for dealing with the epidemic which began in Texas in October, 1911, and lasted well into the following year. All that it is necessary to say is that this book is the last word on the subject up to the present moment. In contains an account of everything that is known about the disease and about the treatment of it. It is a book for the laboratory worker, for the physician, and for the officer of public health. Dr. Sophian knows all about the subject and he tells it without restraint on these pages.

THE PROGNOSIS AND TREATMENT OF DISEASES OF THE HEART. BY R.O. MOON, M.A., M.D. (Oxon), F.R.C.P. Toronto: The Macmillan Company of Canada, Ltd., 1913.

There is a peculiar charm about all the books which come from the Glasgow University Press. If Messrs. Maclehose have ever printed a bad book, the present writer has never encountered it. The present one is issued in Canada by the Macmillan Company, and it is marked by beauty of form, and nice scholarship. In recent years, chiefly through the initiative of James McKenzie, diseases of the heart have come into unusual prominence, and this book may be regarded as one outcome of his fresh research. It can be read in an evening and the task will be a pleasant and profitable one.

THE DEVELOPMENT OF THE HUMAN BODY. A MANUAL OF HUMAN EMBRYOLOGY. BY J. PLAYFAIIR MCMURRICH, A.M., Ph.D., LL.D. Fourth edition, revised and enlarged; illustrated. Price, $2.50 net. Philadelphia: P. Blakiston's Son & Company, 1913.

The first edition of this book appeared when Professor McMurrich was professor of anatomy in the University of Michigan, and in this, the fourth edition, the results of all important contributions upon the subject have been incorporated without any considerable increase in the bulk of the volume. The book, in short,

is a concise statement of the development of the human body, and a foundation for the proper understanding of the facts of anatomy. Where the embryology fails to offer the required data, the author has had free recourse to the facts of comparative anatomy. The subject of the book is an abstruse one, but Professor McMurrich has brought it within the comprehension of the student. The book has long been a standard, and is likely to remain so until the time comes for another revision. It may be looked upon as a product of Canadian medicine, and as such, it is entirely creditable. It gives full expression to the newer tendencies in the teaching of anatomy.

LECTURES ON DISEASES OF CHILDREN. By ROBERT HUTCHISON, M.D., F.R.C.P. Third edition. London: Edward Arnold. Toronto: The Macmillan Company of Canada, Limited, 1913.

These lectures were given at the London Hospital in the year 1902, and were published serially in the *Clinical Journal*. Two years later they were gathered together in the form of a book, and since that time they have gone into the third edition. They are not intended as an exhaustive treatise on the diseases of childhood, although it must be admitted that they leave little unsaid. The subject has been approached from a purely clinical standpoint, and the question of treatment has been dealt with in some detail. In this edition the whole book has been revised and certain new lectures have been added, namely, those on Cœliac Disease, Primary or Croupous Pneumonia in Childhood, Bronchial Pneumonia, Hysteria in Childhood, Disorders of the Heart, and Some Commoner Affections of the System in Childhood. The book is published by Edward Arnold in London, and in Toronto by the Macmillan Company of Canada. Dr. Hutchison is physician to the London Hospital, and at the time of giving these lectures was in charge of the out-patients in the Hospital for Sick Children, Great Ormond Street. The form of the lecture is strictly preserved and it has a charm of its own, especially when it is handled by so competent a person as the present author. There is much in the book which escapes consideration in more formal text-books, and the work is intimately associated with the author's experience.

These lectures are quite familiar to persons who practice this specialty, and they will be glad to have them in the present revised form. There are sixty-nine illustrations, and thirteen diagrams, many of which are of remarkable excellence. The book is governed throughout by a refreshing common-sense.

Books Received

THE following books have been received, and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

FREUD'S THEORIES OF THE NEUROSES. BY DR. EDUARD HITCHMANN, of Vienna. NERVOUS AND MENTAL DISEASE MONOGRAPH SERIES, No. 17. Price, $2.00. New York: The Journal of Nervous and Mental Disease Publishing Company, 1913.

THE MODERN HOSPITAL; ITS INSPIRATION; ITS ARCHITECTURE; ITS EQUIPMENT; ITS OPERATION. BY JOHN A. HORNSBY, M.D., and RICHARD E. SCHMIDT, Fellow American Institute of Architects. Octavo of 644 pages with 207 illustrations; price, cloth, $7.00 net; half morocco, $8.50 net. Philadelphia and London: W. B. Saunders Company, 1913. Canadian Agents: The J. F. Hartz Company, Limited, Toronto.

EPIDEMIC CEREBROSPINAL MENINGITIS. BY ABRAHAM SOPHIAN, M.D. Illustrated; price, $3.00. St. Louis: C. V. Mosby Company, 1913.

THE MODERN TREATMENT OF NERVOUS AND MENTAL DISEASES. By eminent American and British Authors. Edited by WILLIAM A. WHITE, M.D., and SMITH ELY JELLIFFE, A.M., M.D., Ph.D. Two octavo volumes, containing about 900 pages; illustrated. Price per volume, cloth, $6.75 net. Philadelphia and New York: Lea & Febiger. Toronto: D. T. McAinsh & Company, 1913.

DIAGNOSIS OF BACTERIA AND BLOOD-PARASITES. BY E. P. MINETT, M.D., D.P.H., M.R.C.S., L.R.C.P. Second edition; price, 2s. 6d. net. London: Baillière, Tindall & Cox, 1913.

THE PROGNOSIS AND TREATMENT OF DISEASES OF THE HEART. BY R. O. MOON, M.A., M.D. (Oxon.), F.R.C.P. Toronto: The Macmillan Company of Canada, Ltd., 1913.

A Short Practice of Midwifery Embodying the Treatment adopted in the Rotunda Hospital, Dublin. By Henry Jellett, B.A., M.D., F.R.C.P.I. With a preface by Sir W. J. Smyly, M.D., F.R.C.P.I. Sixth edition, revised; illustrated. Toronto: The Macmillan Company of Canada, Ltd., 1913.

Proceedings of the Royal Society of Medicine, Vol. 6, No. 5, March, 1913, with Supplement. Price, 7s. 6d. net. London: Longmans, Green & Company.

Ophthalmology for Veterinarians. By Walter N. Sharp, M.D. 12mo of 210 pages, illustrated; price, cloth, $2.00 net. Philadelphia and London: W. B. Saunders Company, 1913.

The Operating Room and the Patient. By Russell S. Fowler, M.D. Third edition, rewritten and enlarged. Octavo of 611 pages with 212 illustrations. Price, cloth, $3.50 net. Philadelphia and London: W. B. Saunders Company, 1913.

International Clinics. Edited by Henry W. Cattell, A.M., M.D., and others. Volume I. Twenty-third Series. Philadelphia and London: J. B. Lippincott Company. Canadian office: 201 Unity Building, Montreal.

The Catarrhal and Suppurative Diseases of the Accessory Sinuses of the Nose. By Ross Hall Skillern, M.D. Philadelphia and London: The J. B. Lippincott Company, 1913. Canadian office: 201 Unity Building, Montreal.

The Difficulties and Emergencies of Obstetric Practice. By Comyns Berkeley, M.A., M.D., F.R.C.P., M.R.C.S., and Victor Bonney, M.S., M.D., B.Sc., F.R.C.S., M.R.C.P. Illustrated. Toronto: The Macmillan Company of Canada, Limited, 1913.

Res Judicatæ

ON THE COLON AND ILEOCOLOTOMY

THE study of comparative anatomy makes clear that the colon is not of the same functional importance in man as in some of the lower herbivorous animals. This seems even more clearly true of the appendix; and this, with the pineal gland and the pituitary, have been regarded as the most striking of those vestigial remains, which were such useful aids to those who fought the battle of the evolutionary theory. We have been forced to modify our extreme views in regard to the purely vestigial nature of the pituitary, and even of the pineal gland, by the recent studies of their function; though this is far different from that which they fulfilled when they first appeared. It has been shown by Arbuthnot Lane [1] and others [2] that life is quite possible after the removal of the large intestine; and that, indeed, in certain cases, the patient's state may be greatly improved by this procedure. From this fact, together with a biased consideration of the physiology of the colon, extremists have drawn the conclusion that man would be better off if it did not exist.

One of the fashionable complaints of the day is "intestinal toxæmia." This rubric now covers most of the sins formerly ascribed to the defects of the liver. We have, however, not yet reached the point where we complain of having "a colon." Certain types of intestinal toxæmia are, however, taking form; and Van Noorden [3] has described under the name of *enterogenous toxic polyneuritis* a symptom complex, which he considers to be due to the absorption in undue amounts from the bowel, of a chemical body, which his assistant Eppinger has isolated in an impure state, and which on injection into animals causes some of the typical symptoms, e.g., cardiac vagus stimulation and resultant slowing. It is interesting to note that this complex, including such symptoms as headaches, cold hands and feet, fleeting muscular pains, is very similar to that described by Arbuthnot Lane and Chapple; [2] and which, these authors consider, calls for operative interference.

Read before the Section of Surgery: Toronto Academy of Medicine, April 15th, 1913.

Mellanby and Twort[4] have isolated from the fæces a bacillus which is able to produce from one of the amino acids normally formed in digestion of proteins a highly active body, histamine. This body has marked actions on the blood pressure, and on smooth muscle organs generally, and especially on the uterus. It is but one of a similar series of bodies which may be produced daily in our intestines; but which seem to be destroyed by the liver, and at all events normally fail to produce their typical effects, though they may do so in extreme cases. It may further be noted that Bain[5] has obtained two of these bodies by extracting large quantities of urine. It is by no means remarkable that such a bacillus has been found amongst the manifold flora of the intestinal canal. Strasburger[6] and Steele[7] have shown that from one-fifth to one-third of the dried weight of the fæces consist of bacteria. Their bodies yield about one-half of the fæcal nitrogen, something like 128,000,000,000,000 bacteria being voided daily. Most of these, doubtless, develop and flourish in the large bowel.

These facts point to the large bowel being indeed a cess-pool; but are we prepared to believe that a part of the bowel so highly specialized in its anatomical form, its movements, and its biochemistry, is merely a useless seat of fermentation? Anatomically, this part of the gut is cut off from the ileum by a very perfect and active valve, as has been shown conclusively by Keith,[8] Elliott,[9] and Cannon.[10] This valve prevents, under normal conditions, any passage backwards of the mass in the colon. It doubtless does much to prevent the cess-pool extending farther up. In the colon of man we find the same sacculated structure which is so well marked in the herbivora, where well developed rhythmical movements retain the food-stuffs in this part of the bowel for long periods, during which the action of bacteria splits up the otherwise indigestible cellulose, setting free the valuable contents of plant cells. These rhythmic movements also occur in man, and progress through the large bowel is slow. Food reaches the cæcum in approximately four and a half hours, according to Hertz;[11] reaches the transverse colon two hours later; the descending colon some two and a half to three hours later still, and the sigmoid only some twelve hours after being taken. It may be voided eighteen hours after taking, but usually much later. Passage through the small bowels is slightly accelerated if the food contains much cellulose. The total weight of the material entering the cæcum decreases about one half or more before being voided, the water from ninety to seventy-five per cent. This also varies greatly with the character of the food.

The exceedingly thoroughly cooked food and rich protein and fat dietary of highly civilized society has little need of prolonged fermentation, and most of the proteins, fats, and soluble carbohydrates have disappeared before the ileocæcal valve is passed. But where man is forced to live on a coarser vegetable diet, as in China, where, owing to the scarcity of fuel, food is not well cooked, the loss, probably twenty-five to forty per cent. of the vegetable protein, and twenty to thirty per cent. of the carbohydrates, would be serious, did not the fermentation processes of the large bowel tend to reduce it.

The large intestine, too, has important excretory functions. Much of the calcium and phosphates of the food are now known to be excreted by the large bowel (Rey);[12] and probably nine-tenths of the iron. How important these functions are we hardly know as yet. It may be recalled that some drugs, such as morphia, are excreted here.

Arbuthnot Lane advocates in those cases where operation is indicated, complete extirpation of the large bowel, the ileum being anastomosed preferably to the large bowel at the pelvic brim. There is thus no considerable length of large gut to act as reservoir. It may also be recalled that absorption of fluid from the lower part of the large bowel, descending colon, and sigmoid is much slower than from the upper part. Yet we gather that his patients defecate in a normal fashion, needing, indeed, in nine of the fifty cases reported by Chapple,[2] an aperient from time to time. Now, as the food-stuffs pass rapidly, but steadily, through the small bowel, which is usually empty five to seven hours after a meal, it seems clear that as these patients do not defecate at frequent intervals, the lower part of the ileum must have taken on the function of the large bowel. The stools, we are informed, are usually well formed; and hence there must have arisen a reservoir in the lower end of the ileum. In this reservoir fermentation and putrefaction must go on as in the large bowel, and the small gut is without the protection of the ileo-cæcal valve.

In extreme cases, which have been operated on, the patients undoubtedly get a fresh start; and, having learned the dangers of bad habits, are careful to avoid constipation, and all is well. Yet a careful study of the patients on whom colectomy has been done, in regard to the character of their bowel movements, their power to utilise various foods, and the development of their intestinal flora, is needed before we are free to conclude that the large bowel is merely a dangerous vestigial remnant.

References:—

1. Lane: *Lancet*, I, 1903, 153; 1904, I, 19; 1910, I, 193; *Brit. Med. Jour.*, 1911, I, 913.
2. Chapple: *Lancet*, 1911, I, 1131; *Brit. Med. Jour.*, 1911, I, 915.
3. Van Noorden: *Berl. klin. Wochens.*, 1913, 50, 51.
4. Mellanby and Twort: *Jour. of Physiol.*, 1912, 45, 53.
5. Bain: *Lancet*, 1910, I, 1190.
6. Strasburger: *Zeits. f. klin. Medezin*, 1912, 46, 413.
7. Steele: *Jour. Amer. Med. Assoc.*, 1908, II, 647.
8. Keith: *Jour. Anat. Physiol.*, 1903, 38, p. 7.
9. Elliott: *Jour. of Physiol.*, 1904, 31, p. 157.
10. Cannon: "*Mechanical Factors of Digestion*," New York, 1911, p. 155.
11. Hertz: *Constipation and Allied Diseases*," London, 1909, p. 10.
12. Rey: *Arch. f. e. P. u. P.*, 1895, 35, p. 295.

Toronto V. E. Henderson

BRITISH COLUMBIA

The wing which has just been added to the Prince Rupert Hospital was opened by the Hon. Dr. Young on March 24th, last.

A conference was held on April 30th of representatives of the municipalities surrounding Vancouver and included in the term Greater Vancouver. It was resolved that a joint commission should be formed to govern all the hospitals within the districts under consideration and a committee of three was appointed to interview the Vancouver city solicitor with the object of having a bill prepared which should embody the suggestions made at the conference and should be presented at the next session of the legislature.

The rate per patient paid to the Vancouver General Hospital by the city has been increased from forty-five to sixty cents, and in April a grant was made of $10,000 for special purposes and $65,000 for general purposes.

Dr. W. A. Whitelaw, the superintendent of the Vancouver General Hospital, has resigned; his resignation would have taken effect on the first of this month, but he has been asked to continue his duties until the beginning of July. The number of hospital days during the month of March amounted to 10,570, the largest number in the history of the hospital. Four hundred and thirty-nine patients were admitted during the month, 330 being already in the hospital; 428 were discharged, and 31 deaths occurred.

Retrospect of Pathology

I. TUBERCLE BACILLI IN THE CIRCULATING BLOOD

1. Rogers & Murphy, *Journal of the American Medical Association*, March 29th, 1913, p. 995.

THE authors examined fifty cases of pulmonary tuberculosis in various stages. The technique used was the Kurashigi-Schmitter method which consists in taking 1 c.c. of blood with 3 per cent. acetic acid, centrifuging with antiformin and washing with distilled water. Acid-fast rods indistinguishable from tubercle bacilli were found in the blood in all the cases as well as in the blood of five apparently normal persons. The distilled water was tested by the same method and found to be negative.

2. Errors in the Diagnosis of Tubercle Bacilli. Dr. Bontemps, *Deutsche Medizinische Wochenschrift*, March 6th, 1913.

Tubercle bacilli can remain on slides and in centrifuge tubes. Sulphuric acid and potassium bichromate should be used in cleaning the glassware as the bacilli can resist the acid alone. Care should be taken in ruling out other acid-fast organisms, e.g., the smegma bacillus, and organisms which occur in milk, butter and water. Lycopodium spores which are often used for dusting pills may be inhaled. These are acid-fast.

3. Zum Nachweis der Tuberkelbazillen im Stromenden Blut. Dr. Edward Kahn. Preliminary note. *Munchener Medizinische Wochenschrift*, February 18th, 1913.

By way of introduction Kahn mentions the fact that acid-fast rods have been frequently found in the blood of tuberculous patients. These are absolutely acid-fast and have usually been demonstrated by the acetic acid-antiformin method. Using this method Kahn found it impossible to draw the line of distinction between true bacilli and the products of chemical change and contamination. He notes that other authors do not appear to have

this difficulty. He also mentions the discrepancy between the results of animal inoculation and microscopical examination.

His research is divided into animal experiments which are to be reported later and an investigation of the microscopic method of which this is a preliminary report. Bechmeister and Reuben by the acetic acid-antiformin method have recently found acid-fast rods in the blood of normal men and rabbits proved at autopsy to be free from tuberculosis. Kahn, having in mind the fact that lecithin and cholesterin enter into the composition of both the waxy capsule of tubercle bacilli and the stroma of red blood corpuscles, tested masses of the stroma from the corpuscles of horses' blood and proved them to be acid-fast. He also found that by the acetic acid-antiformin method some of the stroma of red cells retains the acid stain although most of this material stains blue or violet. The acid-fast masses when compared directly with tubercle bacilli were found to take fully as deep a red stain. His general conclusion is that the microscopical method is of no value and that the question of tubercle bacilli must be settled by animal inoculation.

II. THE PATHOLOGY OF PERTUSSIS

1. Pertussis—The Histological Lesion in the Respiratory Tract. Mallory & Hornor, *Journal of Medical Research*, xxvii, No. 2, November, 1912.
2. The Relation of the Bordet-Gengou Bacillus to the Lesion of Pertussis. Mallory, Hornor & Henderson, *Journal of Medical Research*, xxvii, No. 4, March, 1913.

I. In the trachea in early cases groups of minute bacilli are seen in the cilia of the epithelial cells. Later these bacteria are less numerous. There is no necrosis and but little exudation. A few polynuclear leucocytes penetrate the epithelium and lie in the lumen and a few lymphocytes congregate in the underlying tissues. The characteristic symptoms of the disease are appreciably due to the mechanical clogging of the cilia by the masses of bacilli.

Apparently there is some absorption of toxin from the growing bacilli. This is evidenced by:

1. The exudation of a few leucocytes.
2. The proliferation at the germinal centres of lymph nodes and spleen of endothelial cells which are phagocytic for normal cells. They are probably producing an antibody.
3. The characteristic lymphocytosis.
4. The production of an antibody which with the Bordet-Gengou bacillus fixes complement.

II. Animal experiments were carried out as follows: A puppy infected with sputum from a case of the disease showed the characteristic tracheal lesion. By the use of the Bordet potato-blood-agar medium two pure cultures were finally obtained from the sputum of patients with the disease. Three monkeys inoculated with pure cultures showed no symptoms and were not killed. Of six puppies inoculated two showed the characteristic lesions microscopically and a pure culture was obtained from one of them. Four others inoculated showed no symptoms but yielded a pure culture of the bacilli. Four rabbits inoculated showed no symptom but emaciation, but in all the characteristic lesions of the disease were demonstrated.

A. M. BURGESS.

Obituary

DR. EDWARD A. PRESTON, of St. John, New Brunswick, died from gastritis on May 4th, in the fifty-ninth year of his age. For the past thirty-two years he had practised in St. John, where indeed most of his life had been spent. He was born in Providence, Rhode Island, but went to St. John when five years of age. He graduated from Long Island Medical College. Dr. Preston was a past master of St. John's Lodge F. and A.M., and a member of the Canadian Order of Foresters and the Independent Order of Foresters. He leaves two sons and three daughters.

DR. AMELIA YOEMANS, of Calgary, died from diabetes, April 22nd, in the seventy-second year of her age. Mrs. Yoemans was born in Quebec and was the daughter of Peter LeSueur, of Ottawa. She married in 1860 and, after her husband's death, took up the study of medicine at the University of Michigan, where she obtained her M.D. degree in 1883. She then went to Winnipeg and became a member of the College of Physicians and Surgeons of Manitoba. She practised in Winnipeg for sixteen years. Dr. Yoemans was a brilliant public speaker and was deeply interested in all questions pertaining to the welfare of women, in which connexion she held many important positions. She leaves two daughters.

DR. EGERTON H. HART died recently in China from typhoid fever, in the forty-fifth year of his age. Dr. Hart was born in

Toronto. About twenty years ago he went to China, where he was appointed official surgeon to the Chinese royal family. He was also in charge of a hospital which was built by his father, the late Dr. V. C. Hart.

DR. JOSEPH L. G. MASSON, of Terrebonne, Quebec, died April 19th, in the fiftieth year of his age. Dr. Masson was born at Terrebone and was educated at St. Mary's College, Montreal. He obtained his M.D. degree from Victoria Medical College. For some years he was resident physician to the Hôtel Dieu, Montreal. Later he went to Paris, where he did post-graduate work. Some years ago, however, Dr. Masson gave up his professional work and undertook the management of the estate of the Hon. Joseph Masson. He leaves a widow and four children.

DR. S. C. MACLEAN, of Spencerville, Ontario died April 17th, in the sixty-seventh year of his age. Dr. MacLean was born in the township of Augusta and graduated from Queen's University in 1874. He practised in North Augusta, Bishops Mills, and Spencerville, where he was well known and much respected.

DR. JAMES MCB. WOODS, of Toronto, died April 24th, in the seventy-fourth year of his age. The cause of death was the fracture of the skull, the result a fall. Dr. Woods was a son of the late James Woods, a Peel County farmer. He took his degree in medicine from the old Toronto Medical College and had practised in Toronto for the last thirty-three years. He leaves a son and three daughters.

News

MARITIME PROVINCES

A NEW hospital to accommodate forty patients is to be built at Glace Bay. The cost is estimated at $42,000. The members of the board of management will be elected by the contributors.

THE following are the names of those who have graduated in medicine from Dalhousie University: Doctor of Medicine and Master of Surgery—Geoffrey Alden Barss, Dartmouth; Roderick

Owen Bethune, Baddeck; Alex. Rae Campbell, B.A., Halifax; Francis Stanislaus Finlay, Halifax; John Parry Harrison, Dunville; James McGregor Johnson, Tatamagouche; Albert Hugh Mackinnon, Pictou Landing; John Edminstone Park, New Glasgow; Arthur Augustine Cuthbert Wilson, Springhill Mines.

DR. N. E. MCKAY, professor of surgery at Dalhousie University, has resigned. On the occasion of his last lecture, he was presented by his students with an address setting forth their appreciation of his worth as surgeon and teacher and of the sympathy and help which he was always ready to give them. The address was accompanied by a gold signet ring bearing the names of the donors.

AT a recent meeting of the Charlottetown Board of Health, a suggestion was made by the health officer, whereby the trustees of the Prince Edward Island Hospital would erect and equip a contagious disease hospital, if the city or the government would guarantee the interest on the cost. The matter of food inspection also was considered and a resolution was passed to urge upon the government the expediency of passing certain laws in this connexion.

ONTARIO

THE following cases of contagious disease were reported in the province during April: smallpox 120 cases, 1 death; scarlet fever, 279 cases, 14 deaths; measles 1,422 cases, 10 deaths; diphtheria, 161 cases, 19 deaths; whooping cough, 23 cases, 3 deaths; typhoid, 69 cases, 14 deaths; tuberculosis, 149 cases, 105 deaths; infantile paralysis, 2 cases, 1 death; cerebrospinal meningitis, 8 cases, 6 deaths.

A SERIES of investigations are to be undertaken during the summer, to determine the amount of sewage pollution in the great lakes and international boundary waters. The work will be under the direction of Dr. J. W. S. McCullough secretary of the provincial board of health. As a preliminary step, a laboratory has been opened at Kingston, where a portion of the work will be carried on.

SEVENTY-TWO patients were admitted to the Brantford Hospital during the month of April; fifty-eight of these were discharged and at the end of the month there were fifty-one patients in the hospital.

THE sanatorium which is being built at Weston for the treatment of children suffering from tuberculosis will accommodate from eighty to one hundred patients. It is beautifully situated on the banks of the Humber and has an open air schoolroom on the roof. It is to be called the Queen Mary Hospital and will be opened by Her Majesty, who will press a button at Buckingham Palace. The cost of the sanatorium has been about sixty thousand dollars.

AT the beginning of May there were sixteen cases of smallpox in the Swiss Cottage Hospital at Toronto. The hospital was first established in 1891, when an outbreak of smallpox occurred; it was a modest frame building quickly erected to meet the pressing needs of the time. During the twenty years of its existence the hospital has been in the charge of Dr. Tweedie and, during this time, three cases only have proved fatal.

FOR several weeks scarlet fever has been unduly prevalent in Toronto. During April sixty-three cases were admitted to hospital; fifty-five cases were discharged and three deaths occurred. At the end of the first week in May, it was stated that there were ninety-three cases of the disease in the city.

THE cost of the new General Hospital at Toronto, when it is completed, will amount to about $3,400,000. It will be one of the most modern and best equipped hospitals on the continent and will accommodate nearly seven hundred patients. It is expected that the public wards will be opened this month; the private wards are not yet quite completed.

IT is proposed to add to the Belleville Hospital a modern operating room and, for this purpose, $3,000 is needed. Over $2,000 already has been subscribed and it is hoped that the remainder will soon be contributed.

IT is the intention that a hospital shall be built at Cobourg. For this purpose $10,000 was bequeathed by the late William Black and $20,000 by the late John Helm, of Port Hope. It is hoped that the citizens will subscribe the $15,000 which still is required before the hospital can be commenced.

SEVERAL cases of typhoid have occurred at Seaforth, two of which have resulted fatally.

A BALANCE of $18,000 still remains of the money collected last year for relief after the forest fire in the Porcupine district. This sum is to be expended upon hospitals, which it is proposed shall be built at Cochrane and at Porcupine. If the hospitals are built, the municipalities are prepared to give the sites.

THE Canadian Mining and Finance Company have established a hospital at Timmins for the benefit of the men employed in the Hollinger mines.

THE equipment for the operating rooms of the surgical wing of the new General Hospital at Toronto has been provided by Mr. J. C. Eaton. The wing itself was given also by Mr. Eaton as a memorial to his late father.

WITH the accommodation provided by the new wing which was opened in April, the Berlin Waterloo Hospital contains sixty-five beds. The cost of the new wing was about $35,000.

TWO isolaton cottages, one for diphtheria and one for scarlet fever, are to be built on Mount Misery near the smallpox hospital at St. Thomas. The hospital itself, which was built in 1888, is badly in need of repair.

DURING March 205 patients were admitted to the London Hospital, 182 patients were discharged, 14 births and 15 deaths occurred; 124 patients were treated in the outdoor free dispensary.

DR. T. A. LOMER, of Montreal, has been appointed medical officer of health at Ottawa at an annual salary of $4,000.

SEVERAL cases of smallpox have occurred in Waterdown. There had previously been a good deal of chicken-pox in the town.

THE by-law to grant $30,000 to the Guelph Hospital has been passed at last. The money will be expended on the hospital building and the east wing will be entirely rebuilt. The plans have been prepared and the work will be commenced at once.

THE Bowmanville Hospital was formally opened on March 26th, last.

THE following is the list of the graduates from Queen's Medical College: Degree of M.D., C.M., W. Boake, Vancouver; G. W. Burton M.B., Great Shemogue, New Brunswick; W. Fizzell, Schomberg; W. G. Hamilton, M.B., Elgin; H. M. Harrison, M.B., Kingston; J. L. Tower, B.A., Belleville; G. N. Urie, B.A., Deloraine, Manitoba.

Degree of M.B.: S. M. Asselstine, Marlbank; V. Blakslee, Sydenham; F. W. Burden, St. Johns, Newfoundland; C. T. Coulter, Thornton; K. C. Dean, Brighton; J. S. Dickson, Kingston; J. A. Dobbie, B.A., Ottawa; A. B. Earl, Athens; W. R. Jeffrey, St. Marys, New Brunswick; A. W. Johnson, Oak Leaf; R. F. Kelso, M.A., Wallacetown; W. W. Kennedy, B.A., Stratford; V. T. Lawler, Kingston; F. L. Leacock, Crystal; L. M. MacDougall, M.A., Kingston; J. F. Maciver, Gould, Quebec; W. M. MacKay, Cornwall; H. Mackinnon, Lake Anslie, Nova Scotia; C. G. Merrick, Kingston; D. J. Millar, North Battleford, Saskatchewan; W. M. McLaren, Cobden; L. J. Nacey, Oswego, New York; J. Norman, Cupids, Newfoundland; R. B. Richardson, Norwood; N. Sanford, Montego Bay, Jamaica; A. B. Simes, Sweets Corners; J. C. Smith, Kingston; M. T. Smith, Greenbush; E. G. Springer, Hyinn, Barbados; E. L. Stone, Forfar; C. K. Wallace, B.A., Kemptville; G. A. Williams, Allenford; L. E. Williams, St. Thomas.

Prize list: Faculty prize in anatomy, S. R. McGregor; faculty prize, $25.00, for highest marks on second year examinations in anatomy, physiology, histology, chemistry, and materia medica, C. B. Waite; faculty prize for highest percentage of marks on second year examination in materia medica, C. B. Waite; the N. F. Dupuis scholarship for highest marks in chemistry of the second year, value, $60.00, G. T. G. Boyce; the Dean Fowler scholarship for highest percentage of marks on the work of the third year, value $50.00, D. E. Bell; faculty prize for best written and practical examination in third year pathology, M. D. Graham; the Chancellor's scholarship, value $70.00, for highest percentage of marks on five years' course, not granted; medal in medicine, E. W. Boak; medal in surgery, V. T. Lawler.

QUEBEC

IT is probable that a new hospital will shortly be built at Sherbrooke.

THE annual meeting of the Alexandra Hospital at Montreal

was held April 23rd. On January 1st, 1912, 92 cases were undergoing treatment in the hospital and during the year 778 cases were admitted; 31 deaths occurred, the death rate being 4 per cent. The daily cost per patient was $1.98. The diseases treated included 532 cases of scarlet fever, 162 cases of diphtheria, 73 of measles, and 81 of erysipelas. The plans have been prepared for a nurses' home, which will be built, at a cost of $60,000, on the lot adjoining the Reid pavilion. A central power station and a laundry are also urgently needed; the cost of these would be at least $50,000.

FINANCIAL assistance is needed at the moment by the Women's Samaritan Hospital at Montreal, which was established nineteen years ago. The present building is to be sold; no decision as yet has been made as to the situation of the new hospital building.

THE fifth annual convention of the Sanitary Services of the province of Quebec will be held in Montreal on September 16th, 17th and 18th, 1913.

THE following is the list of cases of contagious disease reported in the city of Quebec during the months of January, February, and March of this year: diphtheria, 32 cases, 9 deaths; scarletina, 96 cases, 1 death; measles, 28 cases, 2 deaths; variola and variolide, 25 cases; tuberculosis, 25 cases, 21 deaths; chicken-pox, 2 cases.

IT is possible that a Protestant Home for Incurables will soon be built in Montreal. The question was discussed at the annual meeting of the Montreal Protestant House of Industry and Refuge and an estimate of the cost is being prepared.

DURING the months of January, February, March, and April, there were reported in Montreal 767 cases of scarlet fever and 1,644 cases of measles. The contagious diseases reported during the week ending April 26th, were: diphtheria, 17 cases, 4 deaths; scarlet fever, 41 cases, 8 deaths; tuberculosis, 49 cases, 28 deaths; smallpox, 8 cases.

MANITOBA

A BY-LAW is to be submitted to the ratepayers of Brandon, to grant $100,000 to the hospital. If the money is voted, it will be expended on extensions to the building and, in particular, on a much needed maternity ward.

THE salaries paid to probationers in the Brandon Hospital have been increased. Instead of $6, $8, and $10, they will receive in future $10, $12, and $14 a month.

SEVERAL cases of smallpox have been reported in Winnipeg.

THE question of building an isolation hospital at Chase is under consideration. A committee was appointed recently to choose a suitable site and to bring the matter before the provincial government.

THE annual meeting of the Saskatchewan Medical Association will be held in Regina on the 16th, 17th, and 18th of July. Everything possible is being done to make the meeting a successful one. An interesting programme is in course of preparation and arrangements are being made for the entertainment of those who attend, special provision being made for the entertainment of physicians' wives and visiting ladies. The secretary of the association is Dr. Arthur Wilson, 221 Cameron Street, Regina.

SASKATCHEWAN

AT a recent meeting held at Wynayard, an association of physicians was formed by members of the profession practising in the district between Theodore and Lanigan. Dr. Johannesson was appointed chairman and Dr. H. R. Ross, both of Wynayard, was appointed secretary-treasurer of the association.

THE new St. Paul's Hospital, which is being built at Saskatoon by the Sisters of Charity, will be completed next September. A request has been made to the city council for a grant of $5,000 and the matter is under consideration.

A MEDICAL inspector of schools is to be appointed at Prince Albert. The remuneration will be $1,000 a year.

THE plans are being prepared for the new hospital to be erected by the Sisters of Providence at Moose Jaw. A building which will accommodate fifty patients, and an administration building, will be built first, and, later, storeys will be added until there is room for two hundred patients. The hospital will be placed on South Hill.

ALBERTA

IT is proposed to build a new isolation hospital at Edmonton this year. No decision as yet has been made as to the exact plan of the proposed buildings.

DR. A. D. CULLBECK has been appointed medical officer of health at Hardisty to succeed Dr. MacRury who recently resigned.

THREE hundred and forty-six patients were admitted to the Calgary General Hospital last March; the number of hospital days was four thousand nine hundred and forty.

THE third annual congress of the Canadian Health Association will be held in Regina, September 18th, 19th and 20th, next.

Canadian Literature

ORIGINAL CONTRIBUTIONS

Dominion Medical Monthly, May, 1913:

Treatment of Diffuse Septic Peritonitis .	H. A. Bruce.

Le Bulletin Médical de Québec, April, 1913:

Ce que la Compagnie National Cash Register, de Dayton, Ohio, a fait pour le bien-être social de ses 3,500 employés .	E. Nadeau.
Quatre Observations de Grossesse extra-uterine	P. C. Dagneau.

The Canadian Journal of Medicine and Surgery, April, 1913:

Diet in its relation to Disease . .	H. B. Anderson.
Ideas concerning the Causation of some cases of Pancreatitis . . .	E. Archibald.
Abdominal Pain—Its Diagnostic Significance	J. F. Erdmann.

The Western Canada Medical Journal, April, 1913:

The Suppression of Venereal Diseases .	J. W. Barrett.
Medical Service of the State Hospitals .	C. F. Read.

The Canada Lancet, April, 1913:

Chronic infections as a cause of Chronic and Sub-acute Rheumatism (Arthritis)	C. Stewart Wright.
Aural Vertigo (Non-suppurative): A clinical and therapeutical study	R. Lake.

The Public Health Journal, April, 1913:

The principles and results of my treatment of tuberculosis	F. F. Friedmann.
Presidential Address. Canadian Association for the Prevention of Tuberculosis	Hon. A. Beck.
What the Daughters of the Empire are doing towards the prevention of Tuberculosis	Mrs. Gooderham.
First Report of the Juvenile Court	J. E. Starr.
Of what value are Sanatoria as a Public Health Measure	W. B. Kendall.
General Food Inspection	R. Awde.
The Common House Roach as a carrier of Disease	R. C. Longfellow.
Heredity and Public Health	A. P. Reid.

Le Journal de Médecine et de Chirurgie, March, 1913:

Le traitement du Cancer	E. Saint-Jacques.
Inclusion congénitale des trompes et des ovaires dans le ligament large.—Etude d'embryologie	J. A. Saint-Pierre.

Medical Societies

MEDICINE HAT MEDICAL SOCIETY

THE regular monthly meeting of the Medicine Hat Medical Society was held on Friday, April 25th. On this occasion, Dr. C. E. Smyth gave an interesting address on "A recent visit to English hospitals."

PERTH COUNTY MEDICAL ASSOCIATION

A MEETING of the medical men of the district was held at Stratford, Ontario, on Wednesday, April 16th, with the object of forming a medical association. Accordingly, the Perth County Medical Association was formed and the following officers elected: president, Dr. Thomas Sparks, St. Mary's; vice-president, Dr. A. F. McKenzie, Monkton; secretary-treasurer, Dr. F. J. R. Forster, Stratford. The local secretaries are: Dr. G. R. Deacon, Stratford; Dr. Moore, Listowel; Dr. A. D. Smith, Mitchell; Dr. Stanley, St. Mary's. The association will hold its meetings in January, April, July, and October of each year at Stratford, Listowel, and St. Mary's. The next meeting will take place at Mitchell next July. On the occasion of this first meeting of the association, a committee was appointed to arrange a uniform table of fees for the county. The members of this committee are Dr. Quinlan, Straford; Dr. Nichol, Listowel; Dr. C. F. Smith, St. Mary's; Dr. A. D. Smith, Mitchell; and Dr. McKenzie, Monkton.

TORONTO ACADEMY OF MEDICINE

THE regular monthly meeting of the section of medicine was held in the Academy building on the evening of April 8th, Dr. H. B. Anderson in the chair.

Dr. Clarkson presented a girl, aged sixteen, with a cervical rib which could be easily felt and traced for two and a half inches. She had only complained of pain during the last six months. Dr. Hendrick said that very often symptoms did not appear until after puberty. Dr. Boyer said that symptoms were frequently provoked by an occupation which involved the use of the extended arms.

Dr. H. B. Anderson read the history of a man, aged forty, who had a severe convulsion in June, 1912, followed by a series of convulsions with involuntary movements and staggering gait. He entered St. Michael's Hospital in October. At first he was delirious but later regained consciousness. The left arm was flexed, the left side of the face smooth, double optic neuritis. Knee jerks were equal and exaggerated; the left abdominal reflex absent. There was vomiting on a number of occasions; Wassermann negative. A diagnosis of brain tumour was made, but no localization effected. Under iodides the condition improved somewhat, but the patient died in January, 1913. At autopsy, a tumour was found in the right frontal lobe which encroached on the right ascending convolution. Dr. John Ferguson said that iodides had an effect on the area of vascularity surrounding a tumour, irrespective of its luetic or non-luetic character.

Dr. Goldie presented a case report of a man first seen in January, who was supposed to have pulmonary tuberculosis. He had lost weight, had a cough and expectoration. It had come with "a cold" four months before. He had had night sweats, a poor appetite, and dyspnœa. There was limited expansion at the apices with a full percussion note and sibilant rales all over the chest. No tubercle bacilli were found in the sputum. On April 6th, he had gained twenty pounds. His appetite was good and he looked well. In association with symptoms and a history of two years' work at granite cutting, the diagnosis of non-tuberculous fibrosis was the most likely one. Dr. Oille asked how the particles of stone got into the lung and mentioned a case which, at autopsy, showed strong lumbar glands. Dr. John Ferguson said that limestone, slate, and marble particles are comparatively harmless as compared with those of sandstone and granite. Dr. J. H. Elliott said that the definition of the bronchial tree shown in the skiagraph suggested a peribronchitis. The chairman asked whether tuberculin reactions had been tried. Dr. Goldie, replying, said that treatment had consisted largely in cutting off the expectorant drugs which the patient had been taking.

Dr. Buck presented a man, who, a week previously had been struck by a piece of iron just below the clavicle. He complained of pains in his veins, while all the superficial veins of the arm were dilated as far as the neck. Dr. Chambers suggested rest and asked whether citric acid was of value. Dr. Goldie cited a similar case resulting in suppuration in a wound of the finger. Dr. George Wilson said the condition was evidently a thrombosis, not a phle-

bitis. Dr. John Ferguson said that a non-infective phlebitis may exist.

Dr. Thistle reported two cases of syphilitic paraplegia showing improvement after neosalvarsan.

CASE 1. A man aged forty-nine. He had great loss of power in the legs, incontinence of urine, bed-sores, alopecia, and deafness. The Wassermann was positive. Considered incurable. 0.6 grammes of neosalvarsan were given. In two weeks he could walk. 0.9 grammes were given in December, 1912. The incontinence disappeared and the hearing improved markedly. On February 27th, improvement was still greater. Ankle clonus, however, persisted.

CASE 2. A man aged forty-nine, had syphilis twenty-three years ago. He was a typical case of spastic paraplegia. He has had six doses of neosalvarsan and has steadily improved. Dr. Boyer said the lesion was endarteritis rather than myelitis. Dr. Chambers asked how much potassium iodide and mercury had been used before. He thought mercury as a rule was not used enough. Dr. Goldie asked the object of the long interval between injections. Dr. H. B. Anderson enquired as to the difference in effect between salvarsan and neosalvarsan.

Dr. John Oille reported two cases of heart-block.

CASE 1. The heart was hypertrophied, but there was no valvular lesion. There was a slight œdema of the lower extremities. Blood pressure 130-140 m.m. There was a history of attacks of syncope. Venous pulsation in the neck was twice as rapid as the radial pulse.

CASE 2. A lady, aged fifty-four. Had diabetes and is subject to fainting spells. Tracings were shown and analyzed.

The election of officers for the ensuing year resulted as follows: Chairman, Dr. J. T. Fotheringham; secretary, Dr. F. C. Harrison; editor, Dr. A. H. Ralph.

MONTREAL MEDICO-CHIRURGICAL SOCIETY

THE eleventh regular meeting of the soceity was held Friday evening, March 7th, 1913, Dr. D. J. Evans, president, in the chair.

LIVING CASE. Dr. A. D. Campbell exhibited for Dr. Armstrong a child of six in whom the tendon of the third finger of the right hand had been severed for nine months. A piece of tendon

from the right thigh was transplanted and the child has now a fairly useful hand.

PATHOLOGICAL SPECIMENS. Dr. A. M. Burgess exhibited a number of pathological specimens illustrating infectious lesions of the heart valves, one from acute rheumatic fever the organism from which, when injected into a rabbit, produced endocarditis. Another type of endocarditis illustrated was that not so often associated with acute polyarthritis, in which there usually occur large vegetations. These cases may go on to the healing or healed stage in which there is marked calcification and they are bacteria-free. It is the healing lesions which bring on the terminal result in cases like those presented. In one case the patient died with a history of three weeks double gangrene of both legs, the result of blocking of both common iliacs by thrombosis at the aortic bifurcation.

CASE REPORT. Gun shot wound of the cheek, orbit and forehead with unusual complications, by Dr. A. E. Garrow.

DISCUSSION. Dr. J. Alex. Hutchison: This case is in contrast to one which came into my service in the Montreal General Hospital some time ago. The man evidently committed suicide and shot himself. The bullet entered the neck in front of the angle of the lower jaw, passing through the centre of the tongue, up through the roof of the mouth, across the nose, lodging somewhere in the back of the eyeball, probably in the sphenoid bone. He had very little hæmorrhage at the time, in fact he stated that somebody had shot him while he was asleep and he knew nothing about it till he wakened up. He had a very severe secondary hæmorrhage somewhere in the mouth, so severe that the source of it was unrecognized at the time. It ceased of its own accord; he had no recurrence and he went out without any damage to the tongue or the nose; the eye was not disturbed at all; the bullet lodged behind the orbit.

Dr. J. M. Elder: Dr. Garrow stated that there was prolonged delirium in this patient and also that he had commencing optic neuritis in the left eye. I would like to know if it was on account of the delirium that the iodoform gauze was changed? It does seem to me that with such an extensive protrusion of brain substance in the presence of sepsis the delirium might be accounted for by an extension of the infection. Also I would like to know what happened to the other eye, whether the condition subsided or required interference?

Dr. A. E. Garrow: When the patient came to the hospital he was apparently mentally clear and, after using a ten per cent. iodoform gauze to pack the wounds, the delirium was noticed at

the end of thirty-six to forty-eight hours so we withdrew the gauze as a possible source of trouble. Dr. Stirling examined the left eye the afternoon the patient came to the hospital and reported a distinct disturbance in the optic nerve of that eye. The patient left the hospital mentally clear and so far as Dr. Stirling could judge with the eye in perfect condition.

PAPER. The paper of the evening was read by Mr. C. E. Edgett, V.S., of the Department of Agriculture, Ottawa, on "Milk and meat inspection in relation to public health."

DISCUSSION. Dr. Laberge: I was much interested in this paper as this question is a vital one to me. As stated by the chairman, our Federal Government has done something to prevent bad food from being sent from this country to another, or from one province to another; but what has been done is insufficient to answer the needs. The whole question is in the hands of the Minister of Agriculture, and I consider it time for Canada to have a Minister of Public Health, who would take this matter in hand from a health point of view. What has been done so far by the Federal Government has been done only from a commercial standpoint, but if this question could be taken up and studied from a health point of view it would be a far greater advancement for the benefit of the country. The question should be taken up from its foundations—from the very beginning—on the farm. The barns, which are not ventilated at all, where the sun is not allowed to enter, and where all efforts towards cleanliness are avoided—that is where tuberculosis develops: the milk is infected; the products from the milk, like cheese and butter, are of a poor quality, and consequently our products on the different markets are of a low value. If at this point we began the education of our farmers, we should certainly, in a very short time, change the present state of affairs. A few years ago, Mr. Chairman, you were on a committee which studied this question of milk supply and we came to the conclusion that it was necessary to send an inspector to the country to see to what extent this evil of uncleanliness existed; and we were very much astonished at the report showing how really bad the conditions were. Since then, a staff of inspectors has been sent out and undoubted improvements have been made on these farms. The farmers, as a rule, are willing to accept the advice of these inspectors, as they see that in the end by better products they are to reap the benefit.

With regard to meat inspection in Montreal, here we have some protection against infected meat; but in the country there is no protection at all, and the meat that we do not pass in the

market here will be slaughtered and sold in the country. Sometimes the farmers will slaughter their animals at home and usually the quarters are brought to the market on Tuesdays and Fridays and sold. But from these pieces alone it is difficult to recognize whether the animals have been healthy or not; a rigid inspection would frequently result in the whole carcass being destroyed.

Dr. J. M. Elder: I would like to express my appreciation of the very interesting address which Mr. Edgett has given us to-night. I was brought up on a farm, and I claim to know something at first hand of the conditions on these farms from which we get our milk. I am glad to hear that the conditions are very much improved since the report of our committee one or two years ago, but I still think there is much to be done. I have occasion to go frequently to stay over night on these farms and I do not quite take the rosy view which Dr. Laberge takes of the improved conditions. In fact I do not think they are much better. Fifteen or twenty years ago we were not so dependent upon the country for our milk supply, Montreal was a much smaller place and the surrounding farms supplied us with this food. In consequence we got our milk much more promptly than we do now. For instance, the milk that is delivered at my door now does not come from the cow that day or even the day before; in fact it is seldom that we can get yesterday's milk. The trouble is to be remedied, if remedied at all, at the source; and while I quite agree with Dr. Laberge that much has been done and much more can be done by proper inspection, still, all you do is to reach the few larger supplies. For instance, a man is under guarantee to supply so much milk a day; if he has not enough for a certain day he goes and borrows it from his neighbours, none of whom have ever had their farms inspected, and though the conditions may be good in all but one, this one may be sufficient to contaminate the whole milk. One sees milkmen on the street every day borrowing milk when they run short, so that reliance on any one man is fallacious. What we are really met with in any attempt to remedy this evil is the British North America Act. If, as Dr. Laberge says, and as was suggested at the last meeting of the Canadian Medical Association, the government could be persuaded to establish a department of health and emigration, and put all these health laws under one minister and one department, thus taking them out of all the several departments under which they come at present, remedial legislation would result. But to do this would, I fear, rouse the Provincial Rights cry—each province says, "I am going to manage my own affairs." It is only in inter-

provincial or foreign trade that this matter can be taken up. Unless there is a Dominion Act we will go on just as we now are, each province trying to protect itself. The conditions described are all too true and we would certainly welcome legislation to better things. Mr. Edgett speaks of sealed bottles for the distribution of milk—who is to seal them? Unless there is an inspector of some sort these bottles will be sealed in the back shops under all sorts of conditions. I do think that this society might very well add its moral force to the demand that the government should take up some adequate system of inspection on these lines, both with reference to the meat we eat and the milk we drink, because it does not seem to me that the British North America Act covers this at all.

I should like to move that the thanks of the Society be tendered Mr. Edgett for bringing together here these facts which mean so much to the health of the community and to us individually.

Dr. J. G. Adami: I have great pleasure in seconding this motion of Dr. Elder's. At the same time I cannot but feel that there is a possibility of going the wrong way to work. We are slowly improving things, but, as Dr. Elder says, very slowly. I would suggest that in this matter of good food and milk there is a way that shows itself for more rapid improvement, a way that we do not seem to have taken up with sufficient keenness, a way in which I think Australia has been in the van, namely, that the portion of our community, which to judge from certain present appearances may not have quite enough wherewith to occupy itself profitably—I refer to the gentler sex—be asked to take this matter up. In Melbourne they have settled the question; they settled it by the Medical Society of Melbourne being taken with the happy thought that the best thing to do was to hand the solution over to the Women's Council pointing out to them that here was a work that they may take up with advantage. The University of Melbourne offered a course on the elementary chemistry of milk and the physics and bacteriology of the milk supply, how milk is produced, what are the dangers in milk, and what can be done in order to get it pure. It offered this course to the Women's Council. The women of Melbourne took up the matter with zest, so that now the members of their milk committee talk with a certain amount of authority on the matter of the production of a pure milk for the market. We all know that whereas a man may have ideas, if you want work done conscientiously, if you want small details looked after, go to the women. And the women of Melbourne went into various places where milk was sold, they looked after the milk cans,

carts, etc., and they rapidly developed such a system that in two years Melbourne—which has a climate which is almost subtropical —as Dr. Barrett says, was in the absolutely enviable condition of having a pure milk in bottles. The women there control the situation; they demanded certain legislation and they got it, and as I said Melbourne has the best supply of milk of a city of its size, probably in the whole world.

Dr. A. R. Pennoyer: I would like to ask if Mr. Edgett could tell us about the meat inspection which is conducted under the Jewish ritual; it is commonly thought that this is better inspected than the meat for the Christian part of the community.

Dr. A. M. Burgess: With regard to milk inspection, while we inspect our dairies and have them clean, have our cattle clean and as far as possible the factor of cow dung and cattle disease eliminated, there is still one part of inspection lacking and that is the medical inspection of the handlers of the milk. In the case of one of the best known milk supplies in the nieighbourhood of Boston, which is a very well inspected supply, run on the most scientific lines, with perfectly clean barns, the factor of cow disease is well eliminated. On the route of this milk supply there occurred all at once in a period of three days in Boston, Cambridge, and Brookline, about one hundred and fifty cases of acute tonsilitis. It was found that this was due to a contamination of the milk and was an acute streptococcus infection which was fatal in a great many cases. The source was traced to two towns where the milk for this district was produced and where the disease had been prevalent. Personally I received from another very well known and well conducted milk firm near Boston, a bottle with a thumb mark about three inches long and three inches below the mouth of the bottle. Here was certainly a source of contamination. The point yet seems to me that if you have cleaned up your stables and eliminated cow disease you have yet to have your handlers of the milk medically inspected.

Dr. D. J. Evans: I would like to say that there is only one way that this object of a pure milk supply can be carried out and that is by education; we have to educate the public to the conditions that obtain, and indicate the way in which the remedy lies. This is the only way that we can bring the necessary pressure to bear upon the authorities and force the government to carry out the legislation which already exists. A very careful scheme for the control of the dairy and the milk and its distribution in Montreal and districts has been elaborated. This was drawn up by the combined committees of the French and English Medical Societies

and took a year to study and work out; but the difficulty is, can you get the laws enforced? The demand by the public is not strong enough to support the government of the community in enforcing the necessary legislation. Education is absolutely essential and to bring about education information is necessary. I may say with regard to the question of bottled milk, I have a relative who lives in Shanghai, which is a community surrounded by unspeakable filth and where Europeans have to guard themselves against all kinds of disease, particularly cholera. There the milk and meat supply is cared for by a local board of health, every medical man in the city practically being a member and the work is carried out largely by Chinese. There the milk is bottled and each bottle is sealed by an inspector and the system has had unqualified success in that very dangerous community where all sorts of disease are rife. The meat supply is also controlled in the same way, and it shows what can be done if the public is educated along the proper lines.

Dr. Edgett: I wish to thank the chairman and members of this Society for their kindness and appreciation and for the privilege of bringing these facts before you. Dr. Elder raised the question of who would seal the bottles. This is a difficult problem; there are a great many farms and a great many differing conditions, and a limited number of inspectors qualified for the work. The method that is adopted, and that is working in a satisfactory manner, is for the board of health or whatever organization it is which handles this question, to set up a standard for the milk of that community, place a limit on the bacterial count and on the temperature and other conditions, and as regards equipment, the health of the animals, the condition of the place, food, water, ventilation, stables, utensils, handling of the milk and methods used—all this to be recorded on a score card and marks to be given accordingly. It is not possible for the inspector to be on the job all the time so we have to have some method of controlling all these people and when he takes his score card he has to depend a good deal on the statement of the proprietor and the man who handles the milk. The health department requires a certain number of points on these cards and if it is below a certain standard the privilege of supplying milk to the community is immediately cancelled. The seals on all bottles are dated each day and show the time this milk was sealed. In that way each bottle is traced to the man who sells it, samples are examined, and if the bacterial count is high or the standard low, the certificate is cancelled. This is one way in which we can trace who seals the bottle and it has proved very satisfactory.

Dr. Adami has mentioned the necessity of education along

these lines; that is the important part of the whole question. The farmers do not always do these things knowing they are bad, they do them not knowing the difference, not having received the necessary information on the sanitary production of milk. Those who are in a position to know how to better conditions generally keep it to themselves and therefore this information is not given out broadcast as it should be. Here the government could do much in giving out proper literature, it does not cost very much and there would then be little or no excuse for bad conditions on the farm. Again, as Dr. Adami says, the ladies could do much; and, knowing that they generally do things thoroughly, if this were left in their hands and their attention called to it in the proper way, I have no doubt we should soon see a change.

Dr. Pennoyer mentioned that he had heard that Kosher meat was the most reliable, the best as regards inspection, etc. From my experience I cannot agree with him. Taking it from the standpoint of cruelty to animals alone it is bad. They secure the animal by the hind leg, raise it up so that its head and shoulder are just touching the floor and without "stunning" sever the tissues of the neck, arteries and veins, œsophagus, trachea, with the result that, the animal still breathing to a certain extent, the ingesta from the stomach passes into the trachea and bronchi filling the lung tissue; these lungs would be used for food but here the government inspector steps in. Any of the inspectors doing work in the slaughter houses will tell you that the Kosher inspector commonly passes animals suffering from tuberculosis and other conditions—such plain conditions as lesions of the parietal pleura have been looked over, as well as generalized cases of tuberculosis. They have no idea of pathology or sanitation and therefore do not know the seriousness of these things. If they want to find out whether there is an abrasion in the lung they blow it up with their own breath, which in itself is against the rules of sanitation. Taking everything into consideration their system is very unsatisfactory. The government inspector, however, examines the animal afterwards and stamps the same if fit for food and thus the public is protected.

Dr. Burgess mentioned a very important point in connexion with milk delivery, namely, the health of the man who handles the milk. We know that many of these people are careless, a man might be suffering from tuberculosis and other contagious diseases and yet be bottling this milk, putting on the seals, or doing any of the things in connexion with the handling of the milk from the farm to the consumer, and here again it is essential that the medical officer and the veterinarian should work together.